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HANDBOOK OF EMPLOYEE SELECTION

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HANDBOOK OF
Employee Selection

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FIRST EDITION

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HANDBOOK OF EMPLOYEE SELECTION

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PREFACE

This volume is intended as a reference book for personnel executives, psychologists, vocational advisers, psychology students, and other persons interested in the problem of selection of employees by means of psychological tests. It consists of abstracts of the literature on employee testing, but is confined to material which meets certain criteria of adequacy and completeness, as will be explained more fully in the Introduction. The authors felt a need for such a compendium because the literature in this field is so widely scattered that even in the libraries of large universities it is impossible to find many of the references. In compiling these abstracts it was necessary to examine over 300 different periodicals (and many volumes of each) as well as a large number of books and monographs. It seemed to us that a good deal of valuable time is wasted in trying to locate the original sources and that, in most cases, there is no need for each individual to go through this laborious process, provided a reasonably precise abstract of the material were available. Furthermore, a great majority of titles which seem to be important in the selection of any given type of worker actually turn out to be of little value for one or another of several reasons: either they deal in vague generalities, neglect to mention the type of employee, the number of subjects used in the investigation, the criteria of job success employed, or the tests which were used; or they may not report the actual results obtained but state merely that the tests were found satisfactory, not explaining what is meant by satisfactory. It is clear that failure to specify in exact terms any of the items mentioned makes it impossible for the reader to evaluate the investigation or to duplicate the procedure used. Thus we feel that this book fills a definite need in that it makes readily available abstracts which contain the essential data of each investigation, indexed according to type of employee studied. It obviates the necessity of spending considerable time and money in obtaining primary references which are later found to be useless for the purpose at hand; and in most cases the abstract here provided is sufficient to permit evaluation of the procedure and to decide whether it is a desirable starting point for the development of a selection program.

The body of the book consists of abstracts of the literature arranged chronologically and numbered in order. All abstracts are based on primary sources except in a very few cases where the original source was not obtainable and a complete description was available in a reputable secondary source. Information obtained from a secondary source is so indicated. A few abstracts are taken from unpublished reports kindly supplied to us by their authors. The indexes consist of (1) job titles, arranged alphabetically and followed by a series of numbers which refer to the number of the abstract which bears on the job in question, (2) an author index, also referring to the abstract number, and (3) an index of tests, likewise referring to the abstract number. At the outset we planned to classify jobs according to the U.S. Employment Service *Dictionary of Occupational Titles*, but this was subsequently abandoned when it became obvious that in almost no case was the job description full enough to permit such rigorous classification. We have had to be content with a broad, loose classification, given in the terms which the original authors use. In some cases it is as broad as "clerical," which may contain many separate jobs. In other cases the category may be fairly narrowly restricted, as "Hollerith card punch operators." In all cases the abstract specifies as fully as possible, in view of the original report, the job which was under investigation; if the description is very general it is due to the fact that no further information was available.

The abstracts are made as brief as possible consonant with providing the essential information contained in the report. In some cases it has been possible to present the information in very compact form, but in other cases a fuller explanation is necessary to make the procedure clear. Where several types of workers have been investigated in a single study and the procedures have been different for each group, we have separated them for the sake of clarity and have treated them as separate abstracts, but have placed them under the same number heading, lettering them a, b, c, etc., under the same abstract number. Thus "292b" under "clerical" in the job index refers to the second of the abstracts of the article numbered 292.

All abstracts are outlined in terms of five categories. The numbers at the left-hand margin, 1 through 5, always refer to these categories, which are as follows:

1. SUBJECTS: refers to the number (*N*) of the subjects (S) or employees tested and the types of job under investigation. If more than one group of employees was used, these groups are labeled a, b, c, etc., and are referred to by letter in the report of the results.
2. TESTS: lists the tests used; exact test titles are given where possible and are capitalized; descriptive titles of nonstandardized tests are not capitalized. If more than one test was used they are numbered 1, 2, 3, etc., and the tests are indicated by number in the report of the results.

3. CRITERION: indicates the criterion of job proficiency which was used.
4. VALIDITY: gives the results of the investigation, referring to groups of employees which were treated separately by the letters a, b, c, etc. (the composition of these groups having been indicated under 1) and referring to any of several tests by their numbers 1, 2, 3, etc. (these can be identified by referring back to 2).
5. RELIABILITY: refers to the reliability reported for the criterion. In some cases reliabilities of new tests are reported.

These abstracts are intentionally noncritical. They will be used for different purposes by different people and any summary evaluation would certainly not add to their value. Sufficient factual information is given so that the reader can evaluate each one in terms of the use to which he wishes to put it.

The first edition of the *Handbook* is necessarily incomplete. Great difficulty was encountered in obtaining a small percentage of the material (some of which is not, to our knowledge, available in this country), and we decided not to delay publication of the bulk of the material until such time as we might be able to examine these few additional sources. Furthermore, in spite of careful checking of bibliographical sources, we have undoubtedly missed some pertinent references. We would greatly appreciate having our attention called to any references which the reader, bearing in mind our criteria for inclusion, thinks we have missed, and to any errors which may have crept in. We would also appreciate receiving reprints of privately printed monographs or reports appearing in periodicals of restricted circulation. Since reports of employee selection programs are being published continually, it appears that periodic revision of the *Handbook* will be necessary if it is to continue to be useful. New editions will be issued as soon as the accumulation of material makes it advisable.

The abstracts contained in this book do not represent all the significant work which has been done in the field of selection of employees by tests. Many excellent studies which are conducted by industrial firms are not published in sources available to the public. We would like to urge such publication in the interests of better understanding of an important segment of human behavior—namely, work—and of a more thorough investigation of human talents. Furthermore, many psychologists in industry do not have time to prepare their data for publication in the usual sources. We should be glad to receive any such information, and to make it available to the profession by publishing it in future editions of this *Handbook*.

We wish to thank the staff of the Library of The State College of Washington, and particularly Ethel M. Bryce, Reference Librarian, C. R. Armstrong, Associate Librarian, and Dr. G. Donald Smith, Librarian, for their unfailing cooperation and skill in obtaining for us most of the sources upon which this book is based. Without their aid this book could not have been completed.

Thanks are also due to the Inter-Library Loan Department of the University of California at Los Angeles Library, and to Francis Rose, Assistant to the Librarian, for assistance in obtaining some of the references.

We also wish to thank Bernice R. Wilson for typing the final copy with such patience, skill, and good humor.

ROY M. DORCUS
MARGARET H. JONES

LOS ANGELES, CALIF.
February, 1950

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INTRODUCTION

As indicated in the preface, this book contains abstracts of those articles which meet certain criteria of adequacy and completeness. To have included all reports, irrespective of their nature, would have made the book unwieldy and would have reduced its usefulness, as is evidenced by the fact that more than 2,100 references were examined, but only 427 references met the criteria of minimum adequacy and are included here.

The standards which an article must meet in order to be included here are discussed more fully in the following sections. First, the report must specify to some degree the type of employee investigated. We have included those which identify subjects only as "clerical workers" because we thought that they might provide suggestions of areas for investigation. We have excluded those which identify the subjects as "factory workers" because we felt that such a category was so broad as to be useless as a guide in further research. An exception to this rule is the attempt to select workers of any type by temperament scales or personality tests, not for a particular job but rather as an employee with stable personality traits. Reports which identify the subjects in terms of the kind of firm employing them rather than the type of job performed are also excluded.

Second, the number of subjects used must be stated, since without this knowledge one cannot estimate the generality of the conclusions nor does one know how much confidence can be placed in the coefficients of correlation. The reported correlations seem frequently to be quite high if a very small number of subjects is used. This phenomenon is not always evident in the probable errors reported, and may be due to a quite human tendency not to report low correlations, as well as to failure to fulfill conditions demanded by the statistical measures employed. The authors feel that this may also be related to the method of selection of subjects. Not all reports are careful to point out the factors which were operating to produce a selected, rather than a random or unbiased sample of subjects, but it is obvious that frequently there are such selective factors operating, since ordinarily not all applicants for a job, nor all employees on the job, are included in the investigation. This use of a biased sample partly accounts for the fact that in some studies a second group gives results which differ significantly from those obtained with the first group.

Third, the tests which were used as selective devices must be specified. In most cases the name by which the test is known is given in the abstract, but in a few cases, notably some of the German works, the test names, even where they may have meaning for German psychologists, would be of little help to Americans, and we have tried to indicate the nature of the test. In a few other cases the tests are ones which were constructed for the investigation and are described in the report; again we have attempted to indicate their nature without making the abstract unduly long. Anyone who finds that such an investigation is satisfactory for his purposes on other counts can then obtain the original article to ascertain more precisely the nature of the tests used. Reports which state merely that some "tests of mechanical ability" were used are excluded because tests so labeled are of a wide range of types which actually test many different abilities. On the other hand, a few reports which state merely that "an intelligence test" was given are included because it is fairly easy to judge the type of test used, considering the date of publication.

Fourth, the criterion of job proficiency must be stated explicitly, since it is possible to obtain widely different results with various criteria of job success. Reports which do not specify the criterion are excluded. Investigations which report test results but in which there was no attempt to validate these against some criterion of job success are likewise excluded. We have not, however, made a distinction between adequate and inadequate criteria; sufficient information is given, where obtainable, to enable the reader to evaluate the usefulness of the criterion. We have indicated that the criterion must involve a measure of proficiency on the job. This, *ipso facto*, excludes any investigation which uses grades on tests or teachers' marks as a criterion of success, as do many of the studies of typing ability. We have made this stipulation because we believe that the school situation is so different from the job situation in both motivational factors and in actual job description that any reasoning from one to the other is hazardous. To be useful in selecting applicants for a job a test must be validated on that job.

Fifth, the actual results obtained must be reported. They are commonly reported in terms of coefficients of correlation between the test scores and criterion (the method of calculation is not always indicated in the original, but has been given whenever specified in the source); but one also finds comparisons between successful and failing employees in terms of their test scores. Occasionally, where the number of subjects is small, the raw rank of the subjects is given for test performance and job performance. There are a few early German studies which have been excluded even though results are reported, either because they are reported in terms which mean little (as in average number of shifts in rank), or because they are given in raw form in tables and the study does not warrant the time necessary to calculate statistical measures. A small number of American studies which report results only in graphs which cannot be accurately read are likewise excluded. Wherever measures of the reliability of coefficients of correlation are reported they are included in the abstract; if no measure of reliability appears with a correlation coefficient it means that none was included in the original article. Ordinarily no information is given by the author as to the type of measure used for the reliability of correlations and, unless we have specified the measure as probable error or standard error, it has not been possible to tell which of these has been used.

Reporting the reliability of the criterion (abstract category 5) was not essential for inclusion of the article, for the simple reason that such a step would have excluded a very large percentage of those now in the *Handbook*. Where reliability of the criterion is reported we have specified what type of reliability—test-retest, split-half, etc.—is intended, if the original report has permitted it. In view of the vital importance of the reliability of the criterion in evaluating results it is astonishing how few authors have bothered to measure, or at least to report it. In a few cases where a new test was developed and test reliability was reported we have included this, properly labeled, along with criterion reliability, but we have not included test reliabilities of well-known, standardized tests even if they appeared in the report.

There are certain types of articles on selection which the reader may expect to find in this book but which we have excluded. First among these are articles concerned with the selection of military personnel. They are not directly pertinent to the selection of civilian employees and there are other sources which cover this field. In addition to reports dealing with the selection of individuals for strictly military positions, we have also excluded those which validate selection procedures on military personnel even though their jobs are comparable to civilian jobs, because the conditions of employment, work, and motivation are essentially different and we feel that any direct application of results so obtained would be hazardous. Studies concerned with the selection of aviators are similarly excluded because aviation psychology is a specialized field with which the person interested in the selection of employees is not likely to have contact, and there are other sources for this information. Investigations of automobile drivers are not included unless the drivers are paid employees, as bus or taxi drivers. (There are bibliographies of this field already available but little has been done by way of validation of the tests proposed.) In general, studies of accident proneness are not included unless accident rate is a reasonable criterion of job efficiency and there is some attempt at showing a relationship between test scores and accident rate. As was mentioned in the discussion of the criteria governing inclusion of material, studies validated on students are excluded, and the reasons for this are given there. This eliminates all or almost all investigations of engineers, nurses, doctors (medical students) and dentists. Likewise many studies of typists, stenographers, and office-machine operators are excluded for this reason.

Whether to include studies dealing with apprentices was somewhat of a problem, and we formulated no general rule. If the apprentice appears to be a genuine paid employee, and the validation is in terms of success *on the job*, then the study is included. Many of the British studies of engineering apprentices are excluded because validation appeared to be largely in terms of grades given by instructors and the apprentices did not appear to be employees in the ordinary sense. These studies are comparable to the American studies of engineering students. A good deal of the German work is based on apprentices. In many cases these did appear to be genuine employees and they were included if the validation was in terms of job performance. It must be recognized, however, that tests which predict successful apprenticeship may not be nearly as predictive of master craftsmanship, although in an industrial system where apprenticeship is used, the former is a prerequisite to the latter. The distinction between apprenticeship and trade school training is a difficult one, and we have probably not been entirely consistent in our selections. In a sense this problem is connected with the whole problem of length of service of the employee at the time the criterion values are determined. This is an important variable and is often not indicated in the report of the work.

It might be well to point out here the difficulties involved in utilizing results obtained in countries other than one's own. Industries are differently structured, job descriptions are different, training and motivating factors are different, and there is no guarantee that tests useful in one country will be useful in another. The results can be considered as possibly suggestive.

Finally, we have included no reports which merely compare average intelligence levels or interest scores for various occupations. Unless these contain comparisons of good and poor workers in the occupation, they do not meet the criterion of validation which we established for inclusion of material.

The reader will note that some studies of a particular job report seemingly excellent results, whereas other studies of similar jobs report very different findings. There are several factors which probably contribute to this disparity in results. One can always claim differences in procedure and be right. Until relative precision in all aspects of selection procedure is followed by all investigators we can expect differences in the results to be the rule. A more specific factor affecting the results is the biased selection of subjects. Unfortunately this is not always apparent in the report even if it occurred, but one may well be dubious on this score unless all employees on the job, or preferably all applicants hired (but *not* hired on the basis of the tests being validated), are included in the results presented. The early studies generally use fewer subjects, and the presumption is that they were selected groups, which might result in spuriously high validity coefficients. In fact many studies use so few subjects that statistical measures are not even applicable, although they are used. Another factor making for disparity in results is the progressive change in job specifications between the early twenties and the present. Due to the fact that accurate job descriptions are seldom included in these reports of selection procedures, this is not often apparent, but it is easy to guess that a secretary of 1920 would perform very different duties than would a secretary of 1947 (the same thing would be true in many jobs), and different talents would be required. Therefore, even if other factors could be eliminated, a test which was predictive in 1920 might not be predictive in 1947. Finally, we suspect that in some jobs there has been a change in the type of person seeking employment. This would be particularly true in jobs employing women. When fewer jobs were open to them their aspirations were different, so that the type of work sought and performance on the job would be affected.

No book on the topic of employee selection would be complete without a word of caution about the direct application of techniques developed by others. It has become virtually axiomatic that testing programs developed by one concern cannot be used uncritically by another. Previous work is valuable as a starting point for a research program, but any attempt to use a stock selection procedure, or to follow the methods of another company without a thorough check of their predictive efficiency in one's own firm, may be fruitless, and may not be as effective as a program developed for the specific situation obtaining in one's own firm. Even where a selection program has been developed on home ground and by means of thorough research, frequent checks must be conducted, for some factor or factors in the situation may change, requiring a change in selection procedure. There is no easy way to obtain an adequate selection program.

ABSTRACTS

I

AXELSON, O. A.: *Vision test of Pittsburgh group drivers.* New York: Columbia Gas and Electric Company, pamphlet (no date), available through Keystone View Company. Pp. 6 (mimeographed).

1. SUBJECTS: 683 regular and occasional drivers for an industrial concern.
2. TESTS: Keystone Telebinocular Tests.
3. CRITERION: number of accidents in each of 3 visual groups: (1) normal vision, (2) slight defects, (3) serious defects. Total number of accidents: 330.
4. VALIDITY: comparison of per cent of accidents for the 3 criterion groups:

VISION	PER CENT OF DRIVERS	PER CENT OF ACCIDENTS
Normal	20	17.4
Slight defects	57.8	46.1
Serious defects	22.2	36.5

5. RELIABILITY: not given.

2

FEAR, R. A.: Unpublished study of female aircraft riveters. No date.

1. SUBJECTS: 51 female aircraft riveters.
2. TESTS: (1) Bennett Hand Tool Dexterity Test, (2) O'Connor Finger Dexterity Test, (3) Bennett Mechanical Comprehension Test, Form AA.
3. CRITERION: foremen's ratings.

4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	.51
2	.14
3	.14

5. RELIABILITY: not given.

3

MERIAM, J. L.: *Normal school education and efficiency in teaching*. Columbia University, Teachers College Contributions to Education, No. 1, 1906. Pp. 152.

1. SUBJECTS: elementary school teachers, 3 groups: (a) 97, (b) 157, (c) 106.
2. TESTS: (1) grades in normal school, (2) city examination.
3. CRITERION: estimate of teaching efficiency by principal or superintendent.
4. VALIDITY: correlation (product moment) of criterion and various grades:

	GROUP a	GROUP b	GROUP c
Professional courses		.00	
Practice teaching		.02	
City examination, total	.00	−.04	
City examination, methods	−.02	.16	.26

5. RELIABILITY: not given.

4

MCCOMAS, H. C.: Some tests for efficiency in telephone operators. *Journal of Philosophy, Psychology and Scientific Methods*, 1914, 11: 293–294.

1. SUBJECTS: 9 telephone operators.
2. TESTS: (1) a job sample: testing of switchboard operations by use of a small-scale switchboard, (2) a pencil-and-paper motor coordination test.

3. CRITERION: ranking by 2 supervisors.
4. VALIDITY: comparison of test rank and supervisor's rank for Test 1: test "easily detected" the 2 best and 2 out of 3 poorest operators.
   Correlation of Test 2 with criterion: 62 ± .14.
5. RELIABILITY: not given.

5

CLAPP, F. L.: Scholarship in relation to teaching efficiency. *School Review Monographs*, 1915, 6: 64–70.

1. SUBJECTS: (a) 512 elementary teachers, (b) 208 high school teachers.
2. TESTS: scholarship at normal school or university.
3. CRITERION: ratings by superintendents on teaching efficiency, 4-point scale.
4. VALIDITY:

Group a

SCHOLARSHIP	CRITERION SCORES		
	ABOVE MEDIAN	BELOW MEDIAN	TOTAL N
Above median	129	69	252
Below median	59	100	202

Group b

EFFICIENCY RANK	PER CENT BELOW SCHOLARSHIP MEDIAN FOR PROFESSIONAL SUBJECTS	PER CENT ABOVE SCHOLARSHIP MEDIAN FOR PROFESSIONAL SUBJECTS
1	48	52
2	46	54
3	51	49
4	83	17

5. RELIABILITY: not given.

6

BURTT, H. E.: Professor Münsterberg's vocational tests. *Journal of Applied Psychology*, 1917, 1: 201–213.

1. SUBJECTS: 5 groups: (a) 10 wholesale salesmen, (b) 7 industrial executives, (c) 20 retail salespeople, (d) 20 department-store executives, (e) 70 department-store salespeople.
2. TESTS: (1) free association, (2) attention, intellectual, (3) attention, perceptual, (4) word construction by selection, (5) completion, intellectual, (6) completion, perceptual, (7) word building, (8) decision, (9) reasoning, relation, (10) reasoning, principle, (11) scrambled words, (12) scrambled sentences, (13) sentence building.
3. CRITERION: comparison of best and worst individuals as selected by their managers.
4. VALIDITY: per cent superiority of scores of best individuals over poor individuals (significant tests only):

TEST	GROUP				
	a	b	c	d	e
1					
2					
3	87				
4	130				36
5			360	118	55
6	87			42	31
7			175	100	
8					
9					
10	96				
11			246		
12	120		150	90	50
13					

5. RELIABILITY: not given.

7

FONTÈGNE, J., and SOLARI, E.: Le travail de la téléphoniste. *Archives de psychologie*, 1918, 17: 81–136.

1. SUBJECTS: 27 telephone operators.
2. TESTS: (1) immediate memory, (2) serial memory, (3) attention, quality, (4) attention, quantity, (5) determination of position in space, (6) tapping, (7) card sorting, (8) aiming, (9) reaction time, simple, (10) reaction time, average variation, (11) manual asymmetry.
3. CRITERION: order of merit ranking by supervisors.
4. VALIDITY: correlation of supervisor's rank with: total test score: .54 ± .09; total score on tests 1, 2, 3, 4, 7, 8, 9, 10: .70.
5. RELIABILITY: not given.

8

MOODY, F. E.: The correlation of the professional training with the teaching success of normal school graduates. *School Review*, 1918, 26: 180–198.

1. SUBJECTS: (a) 107 men, (b) 527 women, normal school graduates and teachers.
2. TESTS: normal school marks.
3. CRITERION: annual salary 6 years after graduation.
4. VALIDITY: correlation (product moment) of salary and average grades in school:

   Group a: Academic grades: .35 ± .06
   Theory and practice-teaching grades: .25 ± .06
   Group b: Academic grades: .25 ± .03
   Theory and practice-teaching grades: .25 ± .03

5. RELIABILITY: not given.

9

PAYNE, E. G.: Scholarship and success in teaching. *Journal of Educational Psychology*, 1918, 9: 217–219.

1. SUBJECTS: 3 groups: (a) 295 temporary substitute teachers, (b) 295 permanent substitute teachers, (c) 114 teachers (1st or 2nd term as teachers).

2. TESTS: grades in a teachers college.

3. CRITERION: rating, as Excellent, Good, Mediocre, or Unsatisfactory, by the school principal on the following points: management of children, instruction, and attention to details of school business.

4. VALIDITY: comparison of the per cent Excellent, Good, Mediocre, and Unsatisfactory in each third of the class (college class), for each of the three qualities upon which the subjects were rated:

	MANAGEMENT OF CHILDREN			
	EXC.	GOOD	MED.	UNSATIS.
Group a:				
High 3rd	38.5%	52.3%	8.4%	0.8%
Med. 3rd	28.6	60.6	9.5	1.3
Low 3rd	25.0	62.8	10.3	1.9
Group b:				
High 3rd	39.8	51.0	8.0	1.8
Med. 3rd	29.3	59.3	10.4	1.0
Low 3rd	23.9	59.9	14.8	1.4
Group c:				
High 3rd	39.1	46.7	12.0	2.2
Med. 3rd	40.5	58.1	1.4	0
Low 3rd	39.5	57.9	2.6	0
	INSTRUCTION			
Group a:				
High 3rd	29.8	63.9	6.0	0.3
Med. 3rd	21.6	70.6	6.2	1.6
Low 3rd	17.8	73.4	7.9	0.9
Group b:				
High 3rd	36.5	56.7	6.6	0.2
Med. 3rd	27.0	65.9	6.5	0.6
Low 3rd	12.8	72.9	12.8	1.5
Group c:				
High 3rd	39.9	50.2	9.5	0.4
Med. 3rd	27.0	71.6	1.4	0
Low 3rd	17.1	80.3	2.6	0

	DETAILS OF SCHOOL BUSINESS			
Group a:				
High 3rd	54.8	42.4	2.8	0
Med. 3rd	50.1	46.8	2.7	0.4
Low 3rd	45.9	50.4	3.3	0.4
Group b:				
High 3rd	64.9	32.7	2.3	0.1
Med. 3rd	59.9	37.7	2.4	0
Low 3rd	55.4	40.2	4.4	0
Group c:				
High 3rd	68.9	28.2	2.0	0
Med. 3rd	79.9	17.6	3.5	0
Low 3rd	78.6	20.0	1.4	0

5. RELIABILITY: not given.

10

CHAPMAN, J. C., and TOOPS, H. A.: A written trade test: multiple choice method. *Journal of Applied Psychology*, 1919, 3: 358–365.

1. SUBJECTS: 101 bricklayers: 35 novices, 4 apprentices, 36 journeymen, 26 experts.
2. TESTS: a multiple-choice, knowledge-of-trade test for bricklayers.
3. CRITERION: comparison of the 4 groups on the total test and on 18 selected questions.
4. VALIDITY: average score and average deviation for each group:

GROUP	N	TOTAL TEST	18 SELECTED QUESTIONS
Novices	35	78.3 ± 12.5	12.5 ± 5.1
Apprentices	4	128.5 ± 37.5	37.0 ± 8.5
Journeymen	36	206.4 ± 12.7	63.3 ± 5.9
Experts	26	207.4 ± 14.3	66.8 ± 3.9
Possible score		248	72

5. RELIABILITY: not given.

I I

JAQUES, M. P.: Mental tests for typists and stenographers. *Industrial Management*, 1919, 58 (2): 145–147.

1. SUBJECTS: 38 typists (transcribe customers' orders, etc.).
2. TESTS: (1) form substitution, (2) verb-object, (3) color naming, (4) opposites.
3. CRITERION: production records for previous six months (bonus plan).
4. VALIDITY: comparison of scores of good and poor typists (*N* for groups not given):

TYPING RECORD	TEST 1 (ERRORS)	TEST 2 (TIME)	TEST 3 (TIME)	TEST 4 (TIME)
540–735 sheets per day	Less than 2, on average	Less than 35 sec.	Less than 61 sec.	Less than 71 sec.
Less than 430 sheets per day	As many as 12	Over 40 sec.	Almost 65 sec.	At least 78 sec.

(No statistical treatment of results.)

5. RELIABILITY: not given.

I2a

LINK, H. C.: *Employment psychology.* New York: The Macmillan Company, 1919. xii + 440, pp. 22–52. (Also reported in part in *Psychological Review*, 1918, 25: 116–127.)

1. SUBJECTS: (a) 52 shell inspectors, (b) 21 shell gaugers, (c) 10 cartridge inspectors, (d) 28 bullet inspectors, (e) 30 paper shot shell inspectors (four-fifths of force laid off before study began, and production slowed down).
2. TESTS: (1) Lowell Visual Acuity Test, (2) card sorting, (3) Woodworth-Wells Cancellation Test. (4) Woodworth-Wells Easy Directions Test, (5) Woodworth-Wells Number Checking Test, (6) tapping, (7) Whipple Accuracy Test, modified, (8) Whipple Steadiness Test, modified, (9) general intelligence test (not specified).
3. CRITERION: average hourly production record for 4 weeks.
4. VALIDITY: correlation (rank order) of test scores and criterion:

TEST NO.	GROUP a	GROUP b	GROUP c	GROUP d	GROUP e
2	.55	.05	.52	.49	.13
6	.14	.52	—	—	—
3	.63	.17	.48	.26	.11
9	.14	.18	—	—	—
5	.72	−.19	.62	.58	.02

Later another group: 43 inspectors, correlation of production (hourly production, 1 to 4 months) and test scores:

Test 3 = .44
Test 5 = .47
Both tests = .58

5. RELIABILITY: not given.

12b

LINK, H. C.: *Employment psychology*. New York: The Macmillan Company, 1919. xii + 440, pp. 54–59.

1. SUBJECTS: assemblers of small gun parts, 18 applicants tested, 12 hired on basis of tests (female).
2. TESTS: (1) manual dexterity formboard, (2) formboard for perception of odd shapes and sizes, (3) hand dynamometer.
3. CRITERION: ranking by foreman and section boss (independently).
4. VALIDITY: correlation (rank order) of foreman's rank and test rank:

TEST	CORRELATION
1	.52
2	.72
3	.34

5. RELIABILITY: ranking by the 2 supervisors agreed in every case but one.

12c

LINK, H. C.: *Employment psychology*. New York: The Macmillan Company, 1919. xii + 440, pp. 71–76.

1. SUBJECTS: 3 groups: (a) 31 action assemblers, (b) 51 finishing assemblers, (c) 26 action assemblers, firearms company.

2. TESTS: (1) formboard for perception of odd shapes and sizes, (2) manual dexterity formboard, (3) hand dynamometer, (4) Stenquist Mechanical Assembly Test.
3. CRITERION: ranking by foreman and overseer.
4. VALIDITY: correlation (rank order) of foreman's rank and test rank:

GROUP a		GROUP b		GROUP c	
TEST	CORRELATION	TEST	CORRELATION	TEST	CORRELATION
1	.56	4	.35	4	.34
2	.18	1	.32	1	.26
3	.29				

5. RELIABILITY: correlation of foreman's and overseer's rankings:

Group b = .92
Group c = .82

12d

LINK, H. C.: *Employment psychology*. New York: The Macmillan Company, 1919. xii + 440, pp. 94–102.

1. SUBJECTS: 12 comptometer operators (selected from a larger group).
2. TESTS: (1) Woodworth-Wells Number Group Checking Test, (2) a number substitution test, (3) an oral directions test, (4) a simple arithmetic test (addition, subtraction, multiplication, and division), (5) a comptometer addition test, (6) a comptometer multiplication test.
3. CRITERION: ranking by supervisor.
4. VALIDITY: Tests 5 and 6 only: correlation (rank order) of test scores and criterion: 1.0. All tests: ranking by tests agreed with supervisors' ranking in all but 2 cases.
5. RELIABILITY: not given.

12e

LINK, H. C.: *Employment psychology*. New York: The Macmillan Company, 1919. xii + 440, pp. 116–122.

1. SUBJECTS: dial-machine operators, 4 groups: (a) 25, (b) 22, (c) 28, (d) 21 (night shift).

2. TESTS: a speed and accuracy test involving dropping steel balls through a slot in a revolving disc so that they fall into a funnel; 2 trials with slot wide open, 1 with slot half closed.
3. CRITERION: piece-rate earnings over period of 1 to 4 months.
4. VALIDITY: correlation of earnings and test scores:

GROUPS	TRIAL 1	TRIAL 2	TRIAL 3
a	.36	.40	.54
b	.43	.14	No trial
c	.41	.28	.43
d	.22	.22	.50

5. RELIABILITY: not given.

12f

LINK, H. C.: *Employment psychology*. New York: The Macmillan Company, 1919. xii + 440, pp. 124–127.

1. SUBJECTS: 12 apprentice machinists, on job 3 to 5 weeks (none experienced).
2. TESTS: (1) Stenquist Mechanical Assembly Test, (2) a cube test, (3) a formboard.
3. CRITERION: ranked by chief instructor and foreman on "ability to learn the work," after 3 to 5 weeks on job.
4. VALIDITY: correlation (rank order) of test rank and foreman's rank:

TEST	CORRELATION
1	.84
2	.75
3	.81
All 3	.90

5. RELIABILITY: not given.

13

THURSTONE, L. L.: A standardized test for office clerks. *Journal of Applied Psychology*, 1919, 3: 248–251.

1. SUBJECTS: 100 employees of an insurance company, from minor executives to young office clerks.
2. TESTS: (1) Thurstone Clerical Examination, (2) personal data.
3. CRITERION: rating as to 5 grades of work performed.
4. VALIDITY: correlation between test scores and grade of work:
    1. Thurstone test, accuracy, $r = .50$
    2. Thurstone test, speed, $r = .42$
    3. Schooling, $r = .47$
    4. Age, $r = .35$
    5. Thurstone test, accuracy and speed, $R = .61$
    6. Schooling and age, $R = .52$
    7. Thurstone test, speed and accuracy, and schooling, $R = .64$
    8. Thurstone test, speed and accuracy, and schooling and age, $R = .67$.
5. RELIABILITY: not given.

14

MARCUS, L.: Vocational selection for specialized tasks: a study of selective tests for Hollerith-machine operatives. *Journal of Applied Psychology*, 1920, 4: 186–201.

1. SUBJECTS: 115 to 138, depending on test; Hollerith card punch operators in post office.
2. TESTS: (1) civil service examination, (2) cancellation, (3) opposites, (4) whole-part, (5) substitution, (6) directions, (7) number checking, (8) completion, (9) verb-object, (10) logical sequence.
3. CRITERION: efficiency rating (civil service).
4. VALIDITY: correlation of test scores and efficiency rating (speed times accuracy, corrected for position on the practice curve):

TEST	*r*
1	.31
2	.02 ± .06
3	.15 ± .06
4	.12 ± .06
5	.24 ± .06
6	.05 ± .06
7	.09 ± .06
8	.21 ± .05
9	.03 ± .06
10	.32 ± .05

TEST TEAMS	*r*
5, 8, 10.	.45 ± .05
3, 4, 5, 8, 10.	.45 ± .05

5. RELIABILITY: not given.

15

BILLS, M. A.: A test for use in the selection of stenographers. *Journal of Applied Psychology*, 1921, 5: 373–377.

1. SUBJECTS: 3 groups of stenographers and secretaries: (a) 20, (b) 25, (c) 14 cases.
2. TESTS: Bureau Test VI.
3. CRITERION: Group a: ranking. Group b: rating by an executive as failing, getting by, or good. Group c: the best stenographers in several companies.
4. VALIDITY: Group a: a critical score of 60 eliminates one who ranked lowest. Group b: a critical score of 60 eliminates one failure, and one "getting by." Group c: lowest score in group was 109, well above critical score.
5. RELIABILITY: not given.

16

BREGMAN, E. O.: A study in industrial psychology—tests for special abilities. *Journal of Applied Psychology*, 1921, 5: 127–151.

1. SUBJECTS: 2 groups: (a) retail salespeople (*N* varies from 33 to 49), (b) clerical workers, many types (*N* varies from 34 to 59).

2. TESTS: (1) National Research Council Verbal Test A, (2) National Research Council Non-verbal Test A, (3) National Research Council Verbal Test B, (4) National Research Council Non-verbal Test B, (5) a sentence-completion test, (6) Woody-McCall Mixed Fundamentals Test (arithmetic), (7) a "rearrangement of animals" test, (8) Woodworth-Wells: Mixed Relations, (9) a modification of 8, (10) Woodworth-Wells: Opposites, (11) a modification of 10, (12) Woodworth-Wells: Number Group Checking, (13) Woodworth-Wells: Cancellation.
3. CRITERION: Group a: production records for 10 weeks and rating of each S by 3 department heads. Group b: rating by supervisor.
4. VALIDITY: correlation by unlike signed pairs of criteria and tests, only those rated consistently good or poor used:

Group a

	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5 5′ limit	TEST 6
Correlation	−.59	−.09	−.06	.16	−.37	−.16
N	44	45	48	46	48	33

	TEST 7	TEST 8	TEST 9	TEST 10	TEST 11
Correlation	−.56	−.37	−.46	−.16	−.43
N	48	48	48	49	47

Parts 2 and 3 of Test 1 (directions and sentences) correlated: −.84 ($N = 43$).

Group b

	TEST 1	TEST 2	TEST 12	TEST 13	TEST 7
Correlation	.34	.31	.31	−.13	.19
N	59	48	34	35	57

5. RELIABILITY: not given.

17

STRELLER, J.: Die Berufseignung des mittleren kaufmännischen Bureaubeamten im Buchhandel. *Zeitschrift für angewandte Psychologie*, 1921, 19: 342–392. (Also in *Schriften zur Psychologie der Berufseignung und des Wirtschaftlebens*, 1921, 18: 1-61).

1. SUBJECTS: 3 groups of 20 clerical workers each.
2. TESTS: (1) Bourdon cancellation test, (2) a color-naming test, (3) combined numbers and letters (a group of 4 to 8 read to the subject, who then repeats them), (4) a dot-counting test.
3. CRITERION: rating by superiors.
4. VALIDITY: correlation (rank order) of test scores and criterion:

GROUP	TEST 1	2	3	4	TOTAL TEST SCORE
a	.56	.37	.77	.37	.96
b	.48	.60	.54	.49	.86
c	.39	.67	.65	.49	.87

5. RELIABILITY: not given for criterion; for tests (test-retest, $N = 18$): .97

18

YERKES, R. M. (Ed.): Psychological examining in the United States Army. *Memoirs of the National Academy of Science*, 1921, 15: 837.

1. SUBJECTS: 106 graphotype operators in the Treasury Department.
2. TESTS: Army Alpha Examination.
3. CRITERION: output of plates, and accuracy (how measured not given).
4. VALIDITY: correlation between test score and accuracy: .02; between test score and output: −.09.
5. RELIABILITY: not given. (Correlation between output and accuracy: .11).

19

ANDREWS, L. G.: A grading system for picking men. *Sales Management*, 1922, 4: 143–144.

1. SUBJECTS: 34 salesmen, type not given.
2. TESTS: personal data, items not specified.

3. CRITERION: production (commission form of payment) used to classify into 3 groups.
4. VALIDITY: comparison of test score distributions for the criterion groups:

GROUP	TEST SCORES															TOTAL
	−4	−2	0	+1	2	3	4	5	6	7	8	9	10	11	12	
Successful (over $2,000)						2	0	2	0	2	2	3	1	1	3	16
Medium ($600–$2,000)							1	2	1	1	2	1				8
Failure (less than $600)	2	0	1	2	2	0	1	1	1							10

5. RELIABILITY: not given.

20

BLISS, W. B.: How much mental ability does a teacher need? *Journal of Educational Research*, 1922, 6: 33–41.

1. SUBJECTS: 77 teachers, selected as the 2 highest, 2 or 3 average, and 2 lowest in test score the previous year for a given county.
2. TESTS: Terman Group Test of Mental Ability.
3. CRITERION: rating by superintendents on a 5-point scale as to teaching success (21 superintendents).
4. VALIDITY: test scores converted to a 5-point scale and compared with the ratings: complete agreement in 26 per cent ($N = 20$) of the cases; 57 per cent of the lowest on the test doing good work, 14 per cent doing excellent work, but none doing superior work; none of the best on the test were doing poor work.
5. RELIABILITY: not given.

21

BURR, E.: Psychological tests applied to factory workers. *Archives of Psychology*, No. 55, 1922. Pp. 93.

1. SUBJECTS: 75 employees on several jobs involving sorting and assembling feathers for ornaments.

2. TESTS: 4 teams of tests: (1) Trabue Completion Test, card sorting, three directions, digits, and substitution, (2) motor control, sorting, easy directions No. 2, easy opposites, (3) motor control, easy directions No. 2, substitution, sorting, digits, (4) feather sorting, judgment, color discrimination.
3. CRITERION: ranking by 4 superiors.
4. VALIDITY: multiple correlation between criterion and test scores:

   Team 1: $R = .85$
   Team 2: $R = .93$
   Team 3: $R = .97$
   Team 4: $R = .80$

5. RELIABILITY: not given.

22

BURT, C.: Tests for clerical occupations. *Journal of the National Institute of Industrial Psychology*, 1922–23, 1: 23–27, 79–81.

1. SUBJECTS: 30 typists (office of an education authority).
2. TESTS: (1) an intelligence test, (2) spelling and arithmetic, (3) linguistic ability and general information, (4) typing and shorthand.
3. CRITERION: ranking by the supervisor on these points: (1) general office efficiency, (2) efficiency in typing, (3) efficiency in shorthand.
4. VALIDITY: correlations between tests and criterion:

TEST	CRITERION	CORRELATION
1	1	.79
4, shorthand	3	.79
4, typing	2	.60

5. RELIABILITY: not given.

23

Farmer, E.: *Physical measurements in a sweet factory.* Great Britain Medical Research Council, Industrial Fatigue Research Board, Report No. 16, 1922, 78–86.

1. SUBJECTS: 4 groups: (a) 49 packers, (b) 25 packers, (c) 11 wrappers, (d) 14 dippers, all in a candy factory.
2. TESTS: physical measurements.
3. CRITERION: output (piece-rate pay).
4. VALIDITY: partial correlations between certain physical measurements and output:

PARTIAL CORRELATIONS	GROUP a	GROUP b
Output and experience (hand span held constant)	.29 ± .09	.14 ± .13
Hand span and output (reach held constant)	.10 ± .09	.35 ± .11
Output and reach (span held constant)	.10 ± .09	.05 ± .13
Output and span (experience held constant)	.06 ± .10	.32 ± .12

Group c: correlation between shortness of hand span and output: .62 ± .12.
Group d: correlation between hand span and output: .09 ± .18.

5. RELIABILITY: not given.

24

Filer, H. A., and O'Rourke, L. J.: Progress in Civil Service tests, part 2. *Journal of Personnel Research*, 1922, 1: 489–520.

1. SUBJECTS: 90 general clerks, Civil Service Commission.
2. TESTS: Civil Service General Clerical Examination.
3. CRITERION: 3 independent efficiency ratings.
4. VALIDITY: correlation between test scores and efficiency ratings: .70.
5. RELIABILITY: not given.

25

GOLDSMITH, D. B.: The use of the personal history blank as a salesmanship test. *Journal of Applied Psychology*, 1922, 6: 149–155.

1. SUBJECTS: 502 salesmen of life insurance.
2. TESTS: a personal history blank.
3. CRITERION: amount of insurance paid for during the first year after the man was licensed; S judged success or failure.
4. VALIDITY: comparison of per cent successful at successive scoring levels:

SCORE	PER CENT SUCCESSFUL	PER CENT FAILURES
−5–3	4	96
4–8	17	83
9–14	53	47

With critical score at 4, 54 per cent of the failures are eliminated, 84 per cent of the successes remain.

5. RELIABILITY: not given.

26

HOLCOMBE, J. M., JR.: A case of sales research: report on first steps in a study of the selection of life insurance salesmen. *Bulletin of the Taylor Society*, 1922, 7: 112–121.

1. SUBJECTS: 148 life insurance salesmen (complete data available on only 148 out of 477).
2. TESTS: personal history items: age, marital status, number of dependents, insurance held at entry, schooling, number of years out of school, previous insurance selling, previous general selling experience, outside organizations, number of investments, homeownership. Composite weighted score.
3. CRITERION: production used to classify men as successful or failures.

4. VALIDITY: comparison of per cent successful or failing of those scoring +1.5 or less on personal data with those scoring above +1.5:

	SCORES	
	+1.5 OR LESS	ABOVE +1.5
Successful	33%	67%
Failures	73	27

5. RELIABILITY: not given.

27

KENAGY, H. G.: Empty heads make poor clerks. *Forbes*, 1922, 10: 180–182.

1. SUBJECTS: 2 groups: (a) 15 stenographers, 7 secretaries; (b) the "best" stenographers from 5 different companies ($N = 14$).
2. TESTS: an intelligence test.
3. CRITERION: Group a: rating by an executive as Satisfactory, "Getting By," or Failing.

   Group b: designated as best in their companies, scores compared with those of Group a.
4. VALIDITY:

	AVERAGE SCORE
Group a:	
Secretaries, all Satisfactory, $N = 7$	144
Stenographers, rated Satisfactory, $N = 8$	110
Stenographers, rated "Getting By," $N = 4$	65
Stenographers, rated Failing, $N = 3$	63
Group b:	153
12 of the 14 scored above 130	

5. RELIABILITY: not given.

28

KITSON, H. D.: Height and weight as factors in salesmanship. *Journal of Personnel Research*, 1922, 1: 289–294.

1. SUBJECTS: 3 groups: (a) 95 office specialty salesmen, (b) 90 footwear salesmen, (c) 400 insurance salesmen.
2. TESTS: (1) height, (2) weight.
3. CRITERION: ranked by supervisors according to commissions earned.
4. VALIDITY: Group a: practically no differences between highest, middle, and lowest thirds, or between highest and lowest 10 in either test.
   Group b: correlation of test score and criterion: Test 1: .11, Test 2: .05.
   Group c: given graphically only; no trends apparent..
5. RELIABILITY: not given.

29

KNIGHT, F. B.: *Qualities related to success in teaching*. Columbia University, Teachers College Contributions to Education, No. 120, 1922. Pp. 67.

1. SUBJECTS: 156 grade and high school teachers from 3 different towns (not all S's for all tests).
2. TESTS: (1) personal data, (2) 2 intelligence tests (not identified), (3) a professional test of techniques of teaching.
3. CRITERION: ratings of general teaching ability: (a) by other teachers, (b) by supervisors.
4. VALIDITY: correlation (product moment) between criterion and scores in tests:

	CRITERION a	CRITERION b
Age (average correlation)	.14 ± .07	.03 ± .07
Experience (average correlation)	−.04 ± .11	.14 ± .10
Intelligence test No. 1 (range)	−.10 to .54	−.12 to .48
Professional test ($N = 33$)	.45	.77

5. RELIABILITY: correlation of chance halves, teachers' ratings: .90 ± .01; correlation of teachers' ratings and supervisors' ratings: .96 ± .00.

30

KORNHAUSER, A. W.: Some business applications of a mental alertness test. *Journal of Personnel Research*, 1922, 1: 103–121.

1. SUBJECTS: 3 groups: (a) 19 office workers, female, (b) 14 office workers, female, (c) 10 office workers, male.
2. TESTS: Scott Company Mental Alertness Test.
3. CRITERION: rating by supervisors.
4. VALIDITY: correlation (rank order) of test score and criterion:

   Group a: .76
   Group b: .82
   Group c: .40

5. RELIABILITY: not given.

31

MCCANTS, M.: Tests used in selecting employees. *Electric Railway Journal*, 1922, 60: 710–715.

1. SUBJECTS: 47 motormen.
2. TESTS: a standardized intelligence test (not specified), and personal data from application blanks and from the division superintendent.
3. CRITERION: comparative distribution of 23 poorest and 24 best motormen on various traits (picked by company, criterion not stated).
4. VALIDITY: height: a minimum of 67 inches would eliminate 9 of poor group, none of best group; a minimum of 68 inches would eliminate 13 of poor group, one of best group.

   Age at hiring: if all inexperienced men of 36 are rejected, 13 of poor group and 3 of best group are eliminated.

   Nationality: if all applicants born in Ireland, Greece, and Italy are rejected, 10 of the poor group and none of the best group are eliminated.

   Intelligence test: 14 of the poor group were below the lowest man of the best group.

5. RELIABILITY: not given.

32

MUSCIO, B.: *The psycho-physiological capacities required by the hand compositor.* Great Britain Medical Research Council, Industrial Fatigue Research Board, Report No. 16, 1922, 5–37.

1. SUBJECTS: 7 groups: (a) 12 readers, (b) 5 monotype operators, (c) 25 hand compositors, (d) 24 hand compositors, (e) 8 hand compositors on display work, (f) 6 hand compositors, (g) 5 hand compositors.
2. TESTS: Group a: (1) rapidity of observation, (2) immediate memory span, (3) several tests of intelligence. Group b: (1) rapidity of observation, (2) immediate memory span, (3) intelligence, (4) finger coordination. Groups c to g: (1) match stick insertion, (2) cancellation, (3) immediate memory, (4) directions.
3. CRITERION: Group a: ranking by supervisor. Group b: ranking by supervisor but production known. Groups c to g: ranking by overseer.
4. VALIDITY: Group a: correlation of total test performance and "efficiency": .71.

   Group b: correlation of average rank in all tests and "efficiency": .90.

   Group c: average rank on tests correlated with "efficiency": .68 ± .07; weighted scores on tests correlated with "efficiency" rank: .71 ± .06.

   Group d: average rank on tests correlated with "efficiency" rank: .74 ± .06; weighted scores on tests correlated with "efficiency" rank: .80 ± .05.

   Group e: correlation between immediate memory span and "efficiency": .64 ± .11.

   Group f: correlation of "efficiency" and immediate memory: .71;—directions: .82;—match stick test: .65.

   Group g: correlation between "efficiency" and directions: .90;—cancellations: .65.
5. RELIABILITY: not given.

33

Ream, M. J.: Group will-temperament tests. *Journal of Educational Psychology*, 1922, 13: 7–16.

1. SUBJECTS: 122 insurance salesmen.
2. TESTS: Carnegie Bureau of Personnel Research Will-Temperament Test.
3. CRITERION: amount of insurance sold during an 11-week course of instruction, with actual selling half of every day, used to divide group into 3: Successful, Doubtful, and Unsuccessful.
4. VALIDITY: comparison of the number passing and failing the test in the 3 groups, with the critical score set between 0 and 1:

GROUP	NUMBER PASSING TEST	NUMBER FAILING TEST
Successful	61	8
Doubtful	11	12
Unsuccessful	3	27

5. RELIABILITY: not given.

34

Rogers, H. W.: Some empirical tests in vocational selection. *Archives of Psychology*, No. 49, 1922. Pp. 47.

1. SUBJECTS: 2 groups: (a) 38 typists of 10 months' experience, (b) 65 typists of 1½ to 6 months' experience.
2. TESTS: Woodworth-Wells Tests: (1) verb-object, (2) number checking, (3) color naming, (4) action-agent, (5) agent-action, (6) form substitution, (7) hard directions, (8) mixed relations, (9) opposites.
3. CRITERION: Group a: average number of sheets typed per day, best successive 5 weeks. Group b: average number of sheets typed per day, 5th and 6th weeks.
4. VALIDITY: correlation between criterion and test score:

TEST	GROUP a	GROUP b
1	.28	.33
2	.28	.34
3	.39	.36
4	.13	.29
5	.02	.18
6	.04	.17
7	—.20	.16
8	—.07	.03
9	—.09	—.07

5. RELIABILITY: not given.

35

STARCH, D.: The use and limitations of psychological tests. *Harvard Business Review*, 1922, 1: 71–80.

1. SUBJECTS: 2 groups: (a) 37 shoe salesmen, male and female, (b) 29 shoe salesmen, male and female.
2. TESTS: (1) an intelligence test, (2) an occupational shoe test.
3. CRITERION: classification by an executive as Above Average, Average, or Below Average.
4. VALIDITY: comparison of distribution of test scores for the three groups:

Group a:	SCORE ON INTELLIGENCE TEST													
	21	31	41	51	61	71	81	91	101	111	121	131	*N*	MEDIAN
Above av.				1	1	1	1			1	2	1	8	96
Average		2	2	5	1	3	3		3	2	1		22	71
Below av.	2	1	2	1		1							7	41

Group b:	AVERAGE SCORE ON TESTS 1 AND 2													
	16	18	20	22	24	26	28	30	32	34	36	*N*	MEDIAN
Above av.							3	2			1	8	30
Average		1	1	2	3	4	8					19	26
Below av.	1			2	1							4	21

5. RELIABILITY: not given.

36

YOAKUM, C. S.: Can executives be picked by mental tests? *Forbes*, 1922, 9 (8): 259–260.

1. SUBJECTS: 2 groups: (a) 2,000 employees of a chain store: executives, minor executives, and clerks, (b) 133 applicants for minor executive positions.
2. TESTS: Bureau Test VI.
3. CRITERION: Group a: comparison of average scores for the 3 job levels. Group b: those who "made good" with company compared with those who did not.
4. VALIDITY: Group a:

	AVERAGE SCORE	COMMENT
27 executives	127	Only 4 below 100
35 minor executives	119	Only 7 below 100
"Large number" of clerks	55	Only 15% above 100

Group b: of 133 applicants, 82 rejected (24 below 80 on test, 20 between 80 and 100 on test with no other qualifications, 38 on other bases), 51 accepted (2 scored between 80 and 100 on test with good recommendations, one fired as inefficient); of the 49 scoring above 100, only 5 are "unsatisfactory," 82 per cent are "making good."

5. RELIABILITY: not given.

37

BENGE, E. J.: Gauging stenographic ability. *Administration*, 1923, 5: 156–162.

1. SUBJECTS: (a) 24 stenographers, (b) 15 stenographers.
2. TESTS: a standard test for stenographers (described).
3. CRITERION: rating by superiors.

4. VALIDITY: Group a: placing the critical score at 300 eliminates all the failures ($N = 3$), 3 satisfactory employees, and 3 excellent employees; retains 9 satisfactory and 6 excellent.

   Group b: ranking by test and by ratings gives perfect agreement in 2 cases, ½-place disagreement in 3 cases, 1-place disagreement in 5 cases; 5 cases exceeded 1-place disagreement but never more than 5 places.

5. RELIABILITY: not given.

38

BIENEMAN, D.: *Ability in typewriting in relation to vocational guidance.* International Labor Office, Geneva, Studies and Reports, Series J, No. 2, 1923. Pp. 47.

1. SUBJECTS: 28 typists of the French typing branch of the International Labor Office.
2. TESTS: (1) tactile sensitivity, (2) muscular sensitivity, (3) form recognition, (4) memory for 15 words, (5) repeated sentences, (6) cancellation of signs, (7) permutations, (8) mixed sentences, (9) sentence completion, (10) reaction time, (11) tapping, (12) muscular strength, (13) cutting test, (14) speed in writing, (15) spatial estimation, (16) spelling. Not all S's took all tests.
3. CRITERION: ranking by two superiors separately.
4. VALIDITY: ranking by Supervisor II correlated with total score on the 6 best tests (best = correlated highest singly): .84.

   The total score on the same 6 tests correlated with rank according to Supervisor I: .67.

5. RELIABILITY: not given.

39

BILLS, M. A.: Predicting the careers of clerical workers. *Forbes*, 1923, 13: 91–93, 103, 105.

1. SUBJECTS: 2 groups: (a) 11 typists, 70 stenographers, 13 secretaries; (b) time clerks (*N* not given), 25 bill clerks, 55 ledger clerks, 23 bookkeepers.
2. TESTS: a general intelligence test.
3. CRITERION: job level; order of promotion is as given above in 1.
4. VALIDITY: comparison of median scores for each job level:

	MEDIAN SCORE
Group a:	
Typists	85
Stenographers	108.6
Secretaries	132.5
Group b:	
Time clerks	79
Bill clerks	98
Ledger clerks	101
Bookkeepers	112

5. RELIABILITY: not given.

40

BILLS, M. A.: Relation of mental alertness test score to positions and permanency in company. *Journal of Applied Psychology*, 1923, 7: 154–156.

1. SUBJECTS: 133 clerical employees.
2. TESTS: a mental alertness test.
3. CRITERION: job level, and permanency on the job.
4. VALIDITY: comparison of median scores for 5 levels of difficulty of job, and median scores for the individuals at each level who were on the job 30 months later:

GRADE OF WORK	ORIGINAL GROUP		GROUP REMAINING AFTER 30 MONTHS	
	N	MEDIAN SCORE	*N*	MEDIAN SCORE
A (easiest)	16	85.0	7	67.5
B	15	77.5	6	80.0
C	24	105.0	11	95.0
D	56	103.5	26	111.0
E	22	118.5	13	123.0

5. RELIABILITY: not given.

41

HILDEBRANDT, H.: Erfolgskontrollen psychotechnischer Eignungsprüfungen der Firma A. Borsig, Tegel. *Maschinenbau*, 1922–23, 2 (22): 254–256.

1. SUBJECTS: locksmith's apprentices, 2 groups: (a) 15 locksmith's apprentices, ½ year's experience, (b) 16 locksmith's apprentices, 2½ years' experience.
2. TESTS: (1) visual: bisecting angles and lines, (2) spatial perception: recognition of various forms, (3) technical comprehension, (4) intelligence (3 words to combine without restrictions), (5) thought: repeating the essence of a passage read.
3. CRITERION: (1) performance in school and shop (grades), (2) hours spent on 16 shop tasks, (3) judgment of foreman and shop teacher.
4. VALIDITY: groups divided into 3 on basis of test scores and compared in terms of scores on the criterion:

GROUP a	BEST (5)	AVERAGE (5)	WORST (5)	REJECTED APPRENTICES (*N*?)
Test average	117.4	95.8	85.0	70.6
Criterion 1	97.2	74.0	67.4	
Criterion 2	750.5	819.8	901.0	
Criterion 3	82.0	56.0	50.0	

GROUP b	BEST (4)	AVERAGE (8)	WORST (4)
Test average	87.0	79.6	57.0
Criterion 1	70.0	64.5	59.2

5. RELIABILITY: not given.

42

JOHNSON, O. R.: One company's experience in the selection of salesmen. *Administration*, 1923, 5: 646–658.

1. SUBJECTS: 425 salesmen (*N* varies).
2. TESTS: personal history data.
3. CRITERION: designated success or failure on basis of production (exact criterion not stated).
4. VALIDITY:

	SUCCESS		FAILURE	
	N	%	*N*	%
Marital status:				
Married	92	74	102	57
Single	30	24	72	40
Widower	3	2	6	3
Education:				
Grammar school	9	8	9	6
High school	52	47	92	59
College	50	45	55	35

Similar information given on age, number of dependents, height, and experience. No consolidation of information into a selection procedure on the basis of all factors.

5. RELIABILITY: not reported.

43

KORNHAUSER, A. W.: A statistical study of a group of specialized office workers. *Journal of Personnel Research*, 1923–24, 2: 103–123.

1. SUBJECTS: billing machine operators (*N* varies between 17 and 27).
2. TESTS: (1) Army Alpha Examination, (2) cancellation of *a*'s, (3) cancellation of *q*, *r*, *s*, *t*, (4) cancellation of digits, (5) substitution, (6) Knox Cube Test, (7) card sorting, (8) years of schooling.
3. CRITERION: (1) speed index (from production records), (2) accuracy index, (3) per cent accuracy index, (4) rating by 3 supervisors for speed, (5) rating by 3 supervisors for accuracy, (6) rating by 3 supervisors for "value."
4. VALIDITY: correlation of test scores and criteria:

TEST	CRITERION					
	1	2	3	4	5	6
1	−.10	.32	.52	.34	.39	.48
2	.12	.45	.66	.19	.26	.37
3	.22	.02	.32	.16	.10	.21
4	−.05	.24	.39	.13	.16	.20
5	−.04	−.04	.46	.08	.18	.30
6	−.16	.55	.48	.09	.42	.45
7	−.11	.33	.31	.05	.16	.39
8	.23	.31	.39	.36	.63	.55

5. RELIABILITY: correlation between ratings of supervisors: .70 to .90.

44

LOVETT, R. F.: *A study of the application blanks, service records and production records of 1129 salesmen of the Procter and Gamble Company*. M.A. thesis, Carnegie Institute of Technology, 1923. Pp. 68.

1. SUBJECTS: (*N* varies) 1,129 salesmen selling soap products to retail dealers, at least 6 months' experience. Includes 643 who had left company during past 2 years.

2. TESTS: personal history data.

3. CRITERION: production: (1) per cent of dealers sold over a 20-month period, (2) per cent of quota sold over a 20-month period, (3) district manager's ranking (*N* = 402), (4) last salary, (5) length of service, (6) average increase in salary per month.

4. VALIDITY: correlation (product moment) of personal history items and criteria (*N* varies for the different criteria):

ITEM	CRITERION					
	1	2	3	4	5	6
Age on application	.05	.05	.16	.25	.17	.03
Marital status	−.01	.07	.07	.17	.22	.04
Previous traveling sales experience	.03	.07	.11	.21	.03	−.11
Longest time on previous jobs	.03	.07	.10	.21	.21	.03
Number of previous jobs	−.07	.03	.02	−.04	−.07	−.06
Age at beginning of production period	.06	.05	.25	.34	.34	.13
Education					−.10	

P.E. varies from .02 to .04.

5. RELIABILITY: intercorrelations of various criteria:

	2	3	4	5	6
1. Last salary	.44	.49	.45 ± .02	.15	.15
2. Length of service		.34	.42 ± .02	.14	.07
3. District manager's ranking			.27	.25	.21
4. Average increase in salary				.13	.13
5. Per cent of quota sold					.20
6. Per cent of dealers sold					

45a

McCLAIN, J.: *An evaluation of the Meeting Objections Test.* M.A. thesis, Carnegie Institute of Technology, 1923. Pp. 47.

1. SUBJECTS: about 80 Procter and Gamble salesmen (soap products).
2. TESTS: Bureau Test XIV (Meeting Objections Test).
3. CRITERION: (1) per cent of dealers sold, (2) per cent of quota sold, (3) district manager's rating, (4) length of service.
4. VALIDITY: correlation (product moment) of test scores and criterion:

CRITERION			
1	2	3	4
.38 ± .07	−.12 ± .08	.05 ± .08	−.27 ± .07

Correlation between per cent of dealers sold and test score with length of service constant = .42.

5. RELIABILITY: not given.

45b

McCLAIN, J.: *An evaluation of the Meeting Objections Test.* M.A. thesis, Carnegie Institute of Technology, 1923. Pp. 47.

1. SUBJECTS: 80 Hoover Sweeper salesmen (apparently door-to-door).
2. TESTS: Bureau Test XIV (Meeting Objections Test).
3. CRITERION: (1) per cent of sales over demonstrations, (2) length of service, (3) average amount of sale. (No further information.)
4. VALIDITY: correlation (method not specified) of test scores and criteria:

CRITERION	CORRELATION	P.E.
1	−.27	.07
2	.21	.07
3	.09	.08

5. RELIABILITY: not given.

46

MARTIN, E. M.: Aptitude test for policemen. *Journal of Criminal Law and Criminology*, 1923–24, 14: 376–404.

1. SUBJECTS: 30 patrolmen, regulars in Newark Police Department.
2. TESTS: (1) arithmetic, (2) arithmetical reasoning, (3) spelling, (4) opposites, (5) number copying, (6) Common Sense Test from the Army Alpha, (7) reading test, crime statistics, (8) speed in making quick decisions, (9) reading test, crime situation, (10) Toops-Pintner Directions Test, (11) an intelligence test, (12) personal data.
3. CRITERION: rating and ranking by 4 superiors, combined.
4. VALIDITY: multiple correlation of certain of the tests with the criterion: tests 5, 1, 9, 2, 10, 6, and 5 reweighted, $R = .74$.

   If to these are added certain personal data (Test 12)—height at appointment, grade at leaving school, previous occupation, and weight at appointment—$R = .80$.
5. RELIABILITY: rating vs. ranking: .84.

47

MOORE, B. V.: A tested method of using tests for vocational guidance. *School and Society*, 1923, 18: 761–764.

1. SUBJECTS: graduate engineers; N varies (maximum of 121).
2. TESTS: (1) an interest test, (2) an engineering test.
3. CRITERION: type of work (sales or design engineering) in which individual is subsequently successful.
4. VALIDITY: Test 1 ($N = 58$) placed 85 per cent of men in the type of work they were subsequently successful in.

   Test 2 ($N = 121$) classified 68 per cent as executives classified them after a few months' work with them. A follow-up of 76 men showed that the test classified 74 per cent as they were subsequently classified by success in that line.

Both tests ($N = 41$) placed 97 per cent in the type of work they were subsequently successful in.

5. RELIABILITY: not given.

48

MUSCIO, B., and SOWTON, S. C. M.: Vocational tests and typewriting. *British Journal of Psychology*, 1923, 13: 344–369.

1. SUBJECTS: 10 groups: 3 groups of typists from a manufacturing firm ($N = 24, 20, 18$); 22 manuscript typists; 3 groups from a commercial school ($N = 60, 22, 30$); 26 typing pupils from another school; 10 from a typing office; 10 from a business firm.
2. TESTS: (not all tests to each group): (1) cancellation, (2) finding products in a table, (3) sensory discrimination, (4) substitution, (5) immediate memory for sentences, (6) immediate memory for digits, (7) opposites, (8) Trabue Completion, (9) directions, (10) discrimination of meanings, (11) analyzing a table, (12) Army Alpha Examination, (13) Stanford-Binet Scale, (14) touch discrimination, (15) equivalence of grip in two hands, (16) Match Stick Insertion, (17) finger coordination, (18) choice visual reaction time, (19) spelling, (20) vocabulary, (21) Woodworth-Wells: verb-object, (22) Woodworth-Wells: action-agent.
3. CRITERION: ratings on typing efficiency by teachers or supervisors.
4. VALIDITY: correlations between test scores and ratings of efficiency (average for all groups):

TEST	CORRELATION	TEST	CORRELATION
5	.43	3	.26
19	.40	7	.18
9	.34	4	.16
14	.33	22	.13
21	.33	1	.11
2	.31	15	.11
8	.31	10	.10
11	.26	6	.08

There are large differences in the values for different groups on the same test: on Test 5 correlations range from .72 to .04.

5. RELIABILITY: not given.

49

O'ROURKE, L. J.: *Report of research section.* U.S. Civil Service Commission, 40th Annual Report, 1923, L-C.

1. SUBJECTS: 90 clerks (Civil Service Commission office).
2. TESTS: Civil Service General Clerical Examination (penmanship, spelling, arithmetic, and clerical).
3. CRITERION: efficiency ratings by 3 superiors independently (where not in close agreement, S not included in group).
4. VALIDITY: correlation between weighted test score and efficiency ratings: .65.
5. RELIABILITY: not given.

50

PATERSON, D. G.: The Scott Company's File Clerk's Test. *Journal of Personnel Research*, 1922–23, 1: 547–561.

1. SUBJECTS: 43 file clerks.
2. TESTS: (1) Scott Company File Clerk Test, (2) Scott Company Mental Alertness Test.
3. CRITERION: "trade status" determined in consultation with supervisors (had more S's, but criterion unreliable or absent).
4. VALIDITY: correlation (product moment) of test scores and criterion:

Test 1	.82
Test 2	.63

(Correlation between the 2 tests: .68)

Comparison of average score of clerks rated as:

	AV. SCORE	*N*
Good	118	13
Medium	84	18
Poor	40	12

5. RELIABILITY: not given.

51

SNOW, A. J.: Labor turnover and mental alertness test scores. *Journal of Applied Psychology*, 1923, 7: 285–290.

1. SUBJECTS: 111 office boys.
2. TESTS: Scott Company Mental Alertness Test.
3. CRITERION: status after 21 months.
4. VALIDITY: comparison of average scores for various groups:

GROUP	*N*	AVERAGE SCORE
Original	111	38.7
Employed after 21 months	63	41.6
Not employed after 21 months	48	35.1
Leaving for better positions		44.7
Fired		28.1
Promoted	29	46.2
Not promoted	34	35.1

5. RELIABILITY: not given.

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52

SOMERS, G. T.: *Pedagogical prognosis: predicting the success of prospective teachers*. Columbia University, Teachers College Contributions to Education, No. 140, 1923. Pp. 129.

1. SUBJECTS: 110 first-year teachers, rural or small-town (Virginia).
2. TESTS: (1) Thurstone Cycle Omnibus Test, (2) Information (devised for this study), (3) Trabue Language Completion Test, Alpha and Beta, (4) extracurricular activities, (5) black marks in normal school, (6) teacher's ratings of personality.
3. CRITERION: combined rating by principal, superintendent, and supervisor.

4. VALIDITY: correlation (product moment) of test scores and criterion:

Composite of tests	.42
Extracurricular activities	.41
Black marks	−.53
Personality ratings	.62
First semester marks	.60

Multiple correlation of tests, personality ratings, and normal-school success with criterion: .75 ± .03.

5. RELIABILITY: not given.

53a

TOOPS, H. A: *Tests for vocational guidance of children 13 to 16*. Columbia University, Teachers College Contributions to Education, No. 136, 1923. Pp. xii + 159.

1. SUBJECTS: 73 clerical workers in woolen goods manufacturing company (out of 250 employed; selected as representing all degrees of ability).
2. TESTS: (1) I.E.R. Clerical Test C-1, (2) Thorndike Clerical Test, (3) I.E.R. Clerical Test C-2, (4) Stenquist Assembly Test.
3. CRITERION: ranked by supervisors; these then brought into one rank order by assistant personnel manager.
4. VALIDITY: correlation (product moment) between test scores and criterion:

TEST	CORRELATION
1	.40
2	.37
3	.38
4	.36

P.E. about ± .07.

5. RELIABILITY: not given.

53b

TOOPS, H. A.: *Tests for vocational guidance of children 13 to 16*. Columbia University, Teachers College Contributions to Education, No. 136, 1923. Pp. xii + 159.

1. SUBJECTS: (a) 90 regular business clerks, (b) 28 typists, (c) 32 file clerks, (d) 149 district, transfer, and all other not otherwise classified clerks.
2. TESTS: I.E.R. General Clerical Test C-1.
3. CRITERION: ratings made by superintendent (at regular 6-month rating period).
4. VALIDITY: correlation of test scores and criterion:

GROUP	CORRELATION
a	.15 ± .07
b	.02 ± .13
c	.14 ± .12
d	.03 ± .05

5. RELIABILITY: not given.

54

WEMBRIDGE, H. A.: Experiment in picking employees. *American Industries*, 1923–24 (September), 24: 18–20. Also in *Journal of the American Statistical Association*, 1923, 18: 600–606.

1. SUBJECTS: (a) 300 power-sewing-machine operators, (b) 247 operators, (c) 290 operators, all drawn from same group.
2. TESTS: Group a: a dexterity test (inserting a rod in a hole as rapidly as possible). Group b: rating on a rating scale by two people qualified as employment managers. Group c: a mental test patterned after Army Alpha and Beta combined.
3. CRITERION: correlation with piece-rate pay.
4. VALIDITY: Group a: $r = .002$
   Group b: $r = .02$
   Group c: $r = .51 \pm .03$
5. RELIABILITY: not reported.

55

Whitney, F. L.: The analysis of teaching functions. *Journal of Educational Research*, 1923, 7: 297–308.

1. subjects: 1,200 normal school graduates.
2. tests: (1) intelligence, (2) secondary record, (3) academic record, (4) professional record, (5) student teaching success, (6) personal physiological data ("physique").
3. criterion: rating by supervisor during 1st year of teaching.
4. validity: multiple correlation of 6 tests with criterion: .29.
5. reliability: not given.

56

Yoakum, C. S., and Bills, M. A.: Tests for office occupations. *Annals of the American Academy of Political and Social Science*, 1923, 110: 60–73.

1. subjects: 133 employees of a public utilities company (presumably clerical employees).
2. tests: Bureau Test VI.
3. criterion: grade of work performed in a series of 5 jobs that formed a clear line of promotion.
4. validity: correlation between difficulty of work and test score: for original group, .22; for those remaining with company 2½ years, .41.

GRADE OF WORK	*N*	MEDIAN SCORE	PER CENT SCORING OVER 110	PER CENT SCORING BELOW 80
A (easiest)	16	85	26	50
B	15	77.5	20	53
C	24	105	45	33
D	56	103.5	46	30
E (most complex)	22	118.5	50	13

5. reliability: not given.

57

Bacquerisse, L.: Tests for motormen and bus drivers. *Electric Railway Journal*, 1924, 64: 280–285.

1. SUBJECTS: 3 groups: (a) 38 motormen, (b) 50 motormen, (c) 48 bus drivers, all previously "good" as conductors. (French study.)
2. TESTS: (1) distraction test (reaction time), (2) simple reaction time, (3) fatigue resistance (dynamometer), (4) motor suggestibility, (5) judging speed and distance (tachodometer), (6) rapidity of perception (tachistoscope), (7) sound localization, (8) impulsiveness (PGR, with emotion producing stimuli, later a dummy thrown 33 to 50 feet in front of the subject's vehicle), (9) memory—paired associates, (10) intelligence, tests not specified and said to give unsatisfactory results.
3. CRITERION: examined in service by "a very capable platform inspector," and rated Good or Poor.
4. VALIDITY:

TEST RATING	JOB RATING		% AGREEMENT
	GOOD	POOR	
Group a:			
Apt	23	4	89.5
Not apt	0	11	
Group b:			
Apt	36	2	88.0
Not apt	4	8	
Group c:			
Apt	30	3	77.0
Not apt	8	7	

It is not perfectly clear just what tests were used in the final psychometric rating; the presumption is that all were used.

5. RELIABILITY: not given.

58

BINGHAM, W. V., and DAVIS, W. T.: Intelligence test scores and business success. *Journal of Applied Psychology*, 1924, 8: 1–22.

1. SUBJECTS: 73: executives (42), salesmen (20), and sales managers (presumably 11).
2. TESTS: Bureau Test VI.
3. CRITERION: rating of business success by 5 judges on the basis of personal history records.
4. VALIDITY: correlation of success rating and test scores: −.10 ± .08; with age held constant: $r = -.04$.
5. RELIABILITY: mean reliability of ratings = .60.

59

CAUER, M.: Berufspsychologische und psychotechnische Studie zur Eignungsprüfung der Schneiderin. *Industrielle Psychotechnik*, 1924, 1: 73–82.

1. SUBJECTS: 3 groups: (a) 18 dressmaker's apprentices, (b) 11 same, (c) 9 same.
2. TESTS: four groups of tests: (a) manual skill: (1) threading, (2) wire-bending, (3) paper cutting, (4) wooden balls, (5) sewing; (b) sensory acuity: (1) judging extents, (2) parallels, (3) exactness test, (4) dividing circles, (5) ranking sandpaper; (c) space perception: (1) Rybakoff's test, (2) unfolding test, (3) memory for form and color, (4) figures by description, (5) pattern marking; (d) intelligence: (1) memory for meaningful relations, (2) comprehension of essentials, (3) Ebbinghaus test.
3. CRITERION: ranking by supervisor.
4. VALIDITY: correlation of supervisor's rank with test rank: Group a:

TEST	RHO
Manual:	
1	.72
2	.71
3	.68
4	.60
5	.50

TEST	RHO
Sensory:	
1	.74
2	.70
3	.68
4	.60
5	.34
Space perception:	
1	.92
2	.82
3	.84
4	.75
5	.38
Intelligence:	
1	.95
2	.91
3	.91

Correlation between supervisor's rank and rank on each of the four test groups:

TEST GROUP	SUBJECT GROUP		
	a	b	c
Manual	.63	.62	.82
Sensory acuity	.94	.84	.92
Space perception	.89	.67	.75
Intelligence	.80	.59	.45

5. RELIABILITY: not given.

60

Foster, W. R.: Vocational selection in a chocolate factory. *Journal of the National Institute of Industrial Psychology*, 1924–25, 2: 159–163.

1. SUBJECTS: 32 packers in a chocolate factory.
2. TESTS: (1) Hand-eye Coordination, (2) Speed Test I (Pegboard), (3) Speed Test II (beads), (4) imagery and visual memory, (5) Substitution A,

(6) perception of equal distances, (7) memory (cube-imitation), (8) intelligence.

3. CRITERION: estimate of packing ability (by whom?).

4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	.59 ± .07
2	.49 ± .09
3	.44 ± .09
4	.44 ± .09
5	.40 ± .10
6	.37 ± .11
7	.26 ± .11
8 (opposites and completion only)	.47 ± .01

Correlation of whole series of tests, less Test 7, and criterion: .69 ± .06.

5. RELIABILITY: not given. Reliabilities for tests range from .04 to .76.

61

HELLER, O.: Eignungsprüfung und Unfallvorbeugung in der Holzindustrie. *Industrielle Psychotechnik*, 1924, 1: 99–118.

1. SUBJECTS: 17 woodworker's apprentices.
2. TESTS: (1) two-dimensional visual judgment, (2) three-dimensional space judgment, (3) Moede's touch test, (4) hammer test, (5) block piling, (6) memory for form and resourcefulness, (7) tactile reaction time, (8) acoustic reaction time, (9) reaction time to changes in resistance, (10) memory for form, (11) space perception, (12) combination of spatial forms, (13) reading designs (blueprints, etc.), (14) sketching simple designs, (15) arithmetic, (16) tempo of work, (17) bodily size, (18) dynamometer, (19) ergograph.
3. CRITERION: ranked according to performance in workshop.
4. VALIDITY: workshop rank correlated with total weighted test rank: .89.

Correlations given for a few separate tests:

Test 6	.86
Test 14	.82
Test 11	.77
Test 5	.58

5. RELIABILITY: not given.

62

LAHY, J. M.: La sélection psycho-physiologique des machinistes de la Société des Transports en commun de la région parisienne. *L'Année psychologique*, 1924, 25: 106–172.

1. SUBJECTS: 37 motormen (buses and trams).
2. TESTS: (1) auditory reaction time, (2) "diffuse attention," (3) motor suggestibility.
3. CRITERION: classification by the company as Good, Mediocre, or Poor.
4. VALIDITY: all subjects classified Poor on tests also classified Poor by company. Four subjects classified as Good on tests were classified as Mediocre by company. Twenty-three subjects classified as Good on tests were also classified as Good by the company.
5. RELIABILITY: not given.

63

LANG, A. R.: *A study of amount of training and experience as objective factors entering into a basis for determining teachers' salaries.* Ph.D. thesis, Stanford University, 1924.

1. SUBJECTS: 2 groups: (a) 154 elementary teachers, (b) 113 high school teachers (vocational, physical training, and art teachers excluded).
2. TESTS: (1) semester hours of academic preparation (exclusive of psychology and education courses), (2) semester hours of professional training (psychology and education), (3) semester hours of academic training (exclusive of courses in psychology and education) obtained in summer school and extension courses, (4) semester hours of professional training (psychology and education) obtained in summer school and extension courses, (5) local experience.

3. CRITERION: rating of teaching efficiency by supervisor.

4. VALIDITY: correlation of amount of training and ratings:

TEST	Group a		Group b	
	CITY A	CITY B	CITY C	CITY D
1	−.11 ± .06	−.22 ± .11	−.20 ± .08	−.16 ± .14
2	−.20 ± .06	−.13 ± .11	−.13 ± .08	.19 ± .14
3	−.11 ± .06	−.13 ± .11	.16 ± .08	.37 ± .12
4	−.02 ± .06	.13 ± .11	−.03 ± .08	.52 ± .10
5	.26 ± .06	.39 ± .10	.46 ± .07	.42 ± .12

Multiple correlation between all factors and ratings: Group a, City A, .36 ± .06; Group c, City C, .53 ± .07.

5. RELIABILITY: not given.

64

O'ROURKE, L. J.: *Report of the Director of Research*, U.S. Civil Service Commission, 41st Annual Report, 1924, XLVIII-LV.

1. SUBJECTS: 70 experienced distributors of mail in post offices.

2. TESTS: (1) mail distribution test, (2) general adaptability, (3) reading handwriting, (4) memorizing a mail distribution scheme and, after 5 minutes, sorting in terms of it, (5) directions.

3. CRITERION: efficiency ratings based on graphic rating by supervisor and number of pounds of first class mail distributed in 6 months.

4. VALIDITY: comparison of test quartiles and efficiency quartiles (per cent):

TEST SCORES	EFFICIENCY RATINGS			
	LOWEST QUARTILE	THIRD QUARTILE	SECOND QUARTILE	HIGHEST QUARTILE
25 per cent highest	3.03	6.06	36.36	54.54
25 per cent above average	9.09	30.30	33.33	27.27
25 per cent below average	27.27	30.30	24.24	18.18
25 per cent lowest	60.60	33.33	6.06	0

5. RELIABILITY: not given.

65

REAM, M. J.: *Ability to sell*. Baltimore: The Williams and Wilkins Company, 1924. Pp. 64.

1. SUBJECTS: (a) 48 and (b) 75, men at an insurance school (life insurance).
2. TESTS: (1) personal history, (2) Interest Analysis (Yoakum and Freyd), (3) Bureau Test VI (intelligence), (4) Bureau Test IX (will-temperament), (5) Bureau Test XI (social relations), (6) Bureau Test XIV (meeting objections).
3. CRITERION: Group a: amount of insurance sold while at school (11 weeks' selling required during the course). Group b: amount of insurance sold and number of cases sold.
4. VALIDITY: per cent judged Unsuccessful, Doubtful, and Successful for various composite test score groups:

COMPOSITE SCORE	GROUP a			
	N	UNSUCCESSFUL	DOUBTFUL	SUCCESSFUL
3–22	26	0%	8%	92%
0–2	7	28	28	44
−15 to −1	15	67	33	0

COMPOSITE SCORE	GROUP b			
	N	UNSUCCESSFUL	DOUBTFUL	SUCCESSFUL
	46	0%	15%	85%
	8	50	25	25
	21	71	24	5

5. RELIABILITY: not given.

66

RUGGLES, A. M.: *A diagnostic test of aptitude for clerical office work*. Columbia University, Teachers College Contributions to Education, No. 148, 1924. Pp. 85.

1. SUBJECTS: (a) 27 billing clerks, (b) 49 billing clerks (Elliott Fisher operators), (c) 21 dividend clerks, (d) 24 auditing clerks, (e) 15 order

clerks, (f) 22 pricing clerks, (g) 15 payroll clerks, (h) 15 payroll clerks.

2. TESTS: 6 tests based on job analysis: (1) checking for sameness, (2) comparing, (3) locating alphabetically, (4) classifying and sorting, (5) tabulating, (6) computing arithmetically.

3. CRITERION: ranking by supervisor on basis of: (a) aptitude and (b) efficiency of work.

4. VALIDITY: correlation of test scores and criterion:

GROUP	TEST 1		TEST 2		TEST 3		TEST 4		TEST 5		TEST 6	
	CRITERION											
	a	b	a	b	a	b	a	b	a	b	a	b
a	.58	.22	.34	.24	.45	.09	.52	.34	.51	.38	.45	.26
b	.41	.01	.07	.18	.35	.05	.30	.12	.31	.28	.34	.08
c	.42	.34	.74	.52	.30	.13	.41	.36	.56	.56	.65	.57
d	.56	.45	.58	.64	.44	.35	.36	.20	.25	.22	.70	.64
e	.65	.42	.62	.23	.34	.11	.44	.31	.46	.15	.59	.52
f	.22	.24	.57	.67	.53	.58	.20	.15	.37	.54	.17	.36
g	.06	.21	.18	.22	.33	.17	.08	.14	.29	.39	.32	.36

5. RELIABILITY: Group b: correlation of supervisor's rating at 2 different times: .98.

67

SWARTZ, G. O.: Selecting salesmen: getting the right man the first time. *Journal of Personnel Research*, 1923–24, 2: 457–459.

1. SUBJECTS: about 3,000 life insurance salesmen.

2. TESTS: personal data.

3. CRITERION: ratio of sales.

4. VALIDITY: comparison of criterion scores for various personal history items:

ITEM	*N*	RATIO OF SALES
Married	2,645	$10,000
Single	523	9,386
Married, childless	724	9,656
Single	523	10,000
Married, 1 child	1,383	10,000
Married, 3–4 children	389	8,792
Married, 5 or more children	108	7,584
Married, wife dependent	1,666	10,000
Married, wife employed	80	7,088

5. RELIABILITY: not given.

68

VITELES, M. S.: Selecting cashiers and predicting length of service. *Journal of Personnel Research*, 1923–24, 2: 467–473.

1. SUBJECTS: 3 groups: (a) 57 cashiers (cashier-inspector-wrappers), (b) 32 cashier-inspector-wrappers still employed, (c) 68 cashier-inspector-wrappers separated from company.
2. TESTS: F-1, a test designed to measure ability to follow directions, accuracy, arithmetical ability, common-sense judgment, and language ability.
3. CRITERION: (1) rating by supervisors, (2) cause of separation, (3) length of service.
4. VALIDITY: Group a: comparison of test score and Criterion 1:

RATING	*N*	TEST SCORE	
		BELOW 30	30 OR ABOVE
Barely satisfactory	13	9	4
Total *N*	57	14	43

Groups b and c compared:

GROUP	TEST SCORE		
	BELOW 30	30 OR ABOVE	AVERAGE
b	0	32	55.9
c	5	63	51.9

Group c: 2 discharged for incompetency scored below 30; average length of service highest for those scoring 30 to 50.

5. RELIABILITY: not given.

69

WALTHER, L.: Le remplissage des cornets de café. *Archives de psychologie*, 1924, 19: 163–171.

1. SUBJECTS: 7 workers, filling coffee containers.
2. TESTS: (1) discs, (2) cutting, (3) squares, (4) tapping, (5) beads, (6) Pintner Completion Test.
3. CRITERION: ranked by department head.
4. VALIDITY: rank in tests coincides with rank on job (rho = 1.0).
5. RELIABILITY: not given.

70

WHITNEY, F. L.: *The prediction of teaching success*. Journal of Educational Research Monographs, No. 6, 1924. Pp. 85.

1. SUBJECTS: 780 teachers, normal school graduates.
2. TESTS: (1) intelligence, (2) high school record, (3) academic record, (4) marks in professional courses, (5) student-teaching success, by rating, (6) physique.
3. CRITERION: teaching success, as judged by supervisor during 1st semester of teaching after graduation.
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	.02
2	.09
3	.07
4	.14
5	.24
6	.12

Multiple correlation (all tests and criterion): .29.

5. RELIABILITY: not given.

71

ANON.: A method of rating the history and achievements of applicants for positions. *Public Personnel Studies*, 1925, 3: 202–209.

1. SUBJECTS: 500 life insurance salesmen.
2. TESTS: personal history items.
3. CRITERION: sales performance record used to differentiate between successful and unsuccessful salesmen.
4. VALIDITY: on basis of salesmen hired in 1920:

COMPOSITE SCORE	NUMBER OF SUCCESSES
Below 640	No successes
641–670	24 successes, 42 failures
670 and above	76 successes, 27 failures

5. RELIABILITY: not given.

72

CALFAS, P.: Le laboratoire de psychotechnique de la Société des Transports en commun de la région parisienne; contrôle des aptitudes nécessaires aux machinistes. *Génie civil*, 1925, 86: 53–57.

1. SUBJECTS: 38 motormen.
2. TESTS: (1) reaction time, (2) diffuse attention (visual), (3) diffuse attention (visual and auditory), (4) motor suggestibility.
3. CRITERION: considered good or poor by company, specific criterion not given.
4. VALIDITY: comparison of test rating and job rating:

TEST RATING	JOB RATING	
	GOOD	POOR
Good	23	4
Poor	0	11

5. RELIABILITY: not given.

73

COUVÉ, R.: Die Auslese von Personal für statistische Arbeiten. *Industrielle Psychotechnik*, 1925, 2: 277–279.

1. SUBJECTS: 125 clerical workers in a statistical office (sort cards, record numbers, etc.).
2. TESTS: (1) incomplete text, (2) attention for names and numbers, (3) complex transactions, (4) arithmetic for speed, (5) work on time tables, (6) attention in a long task, (7) memory for spatial position, (8) sorting test, (9) cancellation of numbers.
3. CRITERION: rated by supervisors as very good, good, and usable.
4. VALIDITY: comparison of average test score for the three groups:

	AVERAGE TEST SCORE	AVERAGE SPREAD
Very good	1,448	191
Good	1,168	164
Usable	855	146

5. RELIABILITY: not given.

74

CRAIG, D. R.: The preference-interest questionnaire in selecting retail saleswomen. *Journal of Personnel Research*, 1924–25, 3: 366–374.

1. SUBJECTS: 3 groups: (a) 46 saleswomen, (b) 63 saleswomen, (c) 71 saleswomen (all in department stores).
2. TESTS: a preference-interest questionnaire derived from the discriminating items of 5 questionnaires, not specified. (26 other tests failed to discriminate on Group a.)
3. CRITERION: Group a: rating by superior as Good or Poor. Groups b and c: separated into 3 groups (highest and lowest quarters, middle 50 per cent) on basis of value of sales.
4. VALIDITY: Group a: setting critical score just below −1 eliminated all but 3 of the Poor group, retained all but 2 of the Good group: 89 per cent successful.

Group b: scoring used with Group a did not differentiate among the groups; new scoring method gave a correlation (product moment) between test and criterion of .76.

Group c: correlation (product moment) between test scores and criterion, using new scoring: .03.

5. RELIABILITY: reliability of value of sales for Groups b and c: .79. Correlation (rank order) of ratings of 24 employees for August and September, and for April, May, and June: .79.

75

HILDEBRANDT, H.: Beiträge zur Methodik und Praxis der psychotechnischen Eignungsprüfungen auf Grund von Untersuchungen bei der Firma A. Borsig, Tegel. *Psychotechnische Zeitschrift*, 1925–26, 1: 49–54.

1. SUBJECTS: 30 locksmith's apprentices.
2. TESTS: (1) visual estimation (of linear extent, etc.), (2) ranking of lifted weights, (3) general intelligence, (4) technical knowledge, (5) spatial imagination, (6) "motor functions," 2 performance tests.
3. CRITERION: composite rating by manager, "master," and fellow apprentices, with greatest weight given to judgment of "master," based on 16 pieces of shop work; 5-point scale.
4. VALIDITY: correlation (rank order) of test scores and criterion:

TEST	CORRELATION
1	.34
2	.06
3	.59
4	.56
5	.66
6	.66
Total test score	.67
Total test score less Test 2..........	.68

5. RELIABILITY: not given.

76

HUGHES, J. M.: A study of intelligence and of the training of teachers as factors conditioning the achievement of pupils. *School Review*, 1925, 33: 191–200, 292–302.

1. SUBJECTS: 100 teachers of physics in large high schools.
2. TESTS: number of years of college physics (N not given for each group).
3. CRITERION: test of pupils' knowledge of 3 phases of physics.
4. VALIDITY: comparison of mean pupil scores for various amounts of teacher training:

TEACHER TRAINING	MEAN SCORE IN PUPIL TESTS (READ FROM GRAPH)		
	MECHANICS AND HEAT	MAGNETISM AND ELECTRICITY	SOUND AND LIGHT
No college physics	14.8	20.2	19.1
1 year college physics	13.3	22.2	16.3
2 years college physics	15.5	19.0	15.7
College physics major	17.4	24.2	21.1

(No measures of significance of differences.)

5. RELIABILITY: not given.

77

KITSON, H. D.: *Psychology of vocational adjustment*. Philadelphia: J. B. Lippincott Company, 1925. viii + 273, pp. 84–90.

1. SUBJECTS: (a) 95 salesmen, office specialty, (b) 90 salesmen, footwear.
2. TESTS: personal data: height, weight, and age.
3. CRITERION: ranked to commissions earned.
4. VALIDITY: comparison of average scores for high, middle, and low earning groups:

	N	AVERAGE HEIGHT	AVERAGE WEIGHT	AVERAGE AGE
Group a:				
Highest third	32	69.0	155.7	31.2
Middle third	31	68.6	153.0	29.6
Lowest third	32	69.8	157.9	28.8
Group b:				
Highest third	30	69.3	180.2	44.4
Middle third	30	68.0	184.8	41.4
Lowest third	30	69.0	178.5	43.0

Group b: correlation (rank order) between criterion and height: .11; between criterion and weight: .05.

5. RELIABILITY: not given.

78

MANSON, G. E.: What can the application blank tell? Evaluation of items in personal history records of four thousand life insurance salesmen. *Journal of Personnel Research*, 1925–26, 4: 73–99.

1. SUBJECTS: 4,178 agents of 18 life insurance companies.
2. TESTS: personal history items.
3. CRITERION: amount of insurance paid for in 1921.
4. VALIDITY: correlation of various personal history items and criterion: all correlations are low; highest is found with Group II (186 full-time, urban, 1-year agents) for amount of insurance carried at time of contract: .33.

   Multiple correlation for amount of insurance carried, number of clubs, age at contract, number of dependents at contract (with production) for Group II (186 full-time agents): .40.

   Multiple correlation for amount of insurance carried at contract, number of clubs, age at contract, total life insurance experience (with production) for Group VI (867 full-time agents): .36: with extreme cases making for nonlinearity removed: .40.
5. RELIABILITY: correlation (product moment) between amount of business paid for in 1920 and 1921 for full-time agents: .69 (*N* not given).

79

Martin, A. H., Doig, B. C., and Simmat, R.: Some psychological tests applied to engineering workshops' apprentices. *Australasian Journal of Psychology and Philosophy*, 1925, 3: 57–69.

1. SUBJECTS: four groups: (a) 20 miscellaneous shop apprentices, (b) 12 brass lathe apprentices, (c) 7 toolroom fitting apprentices, (d) 10 millwright's apprentices.
2. TESTS: (1) Army Alpha Examination, (2) Koh's Block Design Test, (3) Link Formboard, (4) judgment of lengths, (5) centering circles, (6) bisection of angles, (7) tachometer, (8) judgment of strain, (9) accuracy, line drawing, (10) three-hole tapping, (11) assembling matches, (12) pursuit meter, (13) grading grays.
3. CRITERION: combined ranking by foreman and 2 subforemen.
4. VALIDITY: correlation between criterion and test scores:

GROUP	TEST							
	1	2	3	4	5	6	7	8
a	.41				.70	.55	.60	.36
b	.24	.23						
c				.66				.75
d				.66	.71			

GROUP	TEST					AVERAGE TEST RANK
	9	10	11	12	13	
a						.70
b		.36	.29			.74
c	.66		.73			.96
d	.70					.66

5. RELIABILITY: not given.

80

OSTRANDER, J. M: One hundred and fifty policemen. Some observations upon 150 probationary policemen of the Detroit Police Department. *Mental Hygiene*, 1925, 9: 60–73.

1. SUBJECTS: 108 policemen, probationary period (first 6 months on the force).
2. TESTS: abbreviated Stanford-Binet Test.
3. CRITERION: rating by superior on 10 items.
4. VALIDITY: comparison of mental age and criterion:

RATING	*N*	MENTAL AGE									
		9	10	11	12	13	14	15	16	17	18
50–59	2	1	1								
60–69	20	2	1	1	3	5	7		1		
70–79	33	3	1	4	5	9	5	4	2		
80–89	45	1	2	4	8	7	9	8		3	3
90–100	8			1	1	2		2	2		

5. RELIABILITY: not given.

81

RUPP, H.: Untersuchung zur Lehrlingsprüfung bei Siemens-Schuckert-Berlin, *Psychotechnische Zeitschrift*, 1925–26, 1: 11–25, 54–74.

1. SUBJECTS: 54 metal worker's apprentices.
2. TESTS: (1) 20 "spatial" tests, (2) 15 manual tests, (3) 2 tests of technical knowledge. The first 2 categories consist of relatively simple tests.
3. CRITERION: rating on a 5-point scale by supervisor on basis of a number of work samples and the time required to finish them.
4. VALIDITY: average difference between the total test score and the total criterion score: .57 (each rated on a 5-point scale).
5. RELIABILITY: not given.

82

Shellow, S. M.: Research in the selection of motormen in Milwaukee. *Journal of Personnel Research*, 1925–26, 4: 222–237.

1. subjects: motormen in Milwaukee, 3 groups: (a) 17, (b) 48, less than 1 year's experience, (c) 50, 1 to 5 years' experience.
2. tests: (1) Viteles Motorman Selection Test, (2) (Viteles) Common-sense Judgment Test (M-104), (3) Revised Viteles Motorman Selection Test.
3. criterion: (1) supervisors' ratings on a 50-mm. scale, (2) accident record (median separates groups).
4. validity: Group a: correlation between training time and rating of operation of car: .57; correlation of score on Test 2 and rating of judgment in handling of car: .58.

   Group b: comparison of score on Test 3 and accident record:

	GROUP			
	POOR	GOOD	WORST	BEST
Accidents per month	1.68	0.78	1.43	0.50
Error score on test	20.4	24.1	24.4	20.9
N	18	18	6	6

   Group c: comparison of score on Test 3 and accident record:

	GROUP			
	POOR	GOOD	WORST	BEST
Accidents per month	0.78	0.43	0.63	0.22
Error score on test	17.4	17.5	17.9	10.1
N	19	19	6	6

5. reliability: average deviation of supervisors' ratings: attention, 7.7 mm.; operation, 6.4 mm.; judgment, 7.4, 5.2, and 6.2 mm. (3 different types); deviation from own rating after one week: attention, 6.4 mm.; operation, 4.4 mm.; judgment, 5.2, 4.9, and 6.0 mm. (3 different types).

83

SPIELMAN, W.: Scientific methods of engaging weavers. *Journal of the Textile Institute, Proceedings*, 1925, 16: 317–320. (Also reported in part in *Journal of the National Institute of Industrial Psychology*, 1924–25, 2: 256–261.)

1. SUBJECTS: 13 weavers.
2. TESTS: (1) disparate attention, (2) discrimination of pattern, (3) memory of pattern, (4) discrimination of thickness of yarn, (5) fine threading, (6) speed of twisting a screw, (7) number of turns in twisting up a screw, (8) a maze, where foresight is possible.
3. CRITERION: ranking by manager.
4. VALIDITY: rank order correlation of test scores and criterion:

TEST	CORRELATION
All	.77 ± .07
1	.51 ± .14
2	.49 ± .14
3	.38 ± .16
4	.41 ± .15
5	.41 ± .15
6	.63 ± .11
7	.73 ± .09
8	.41 ± .15

5. RELIABILITY: not given.

84

SPIELMAN, W.: Vocational tests for selecting packers and pipers. *Journal of the National Institute of Industrial Psychology*, 1924–25, 2: 365–372.

1. SUBJECTS: 19 packers, 19 pipers in a candy factory, all female.
2. TESTS: (1) finger dexterity, (2) strength of grip, (3) size and control of grasp, (4) hand-eye coordination, (5) estimation of size, (6) observation.
3. CRITERION: ranking by forewoman for efficiency, ranking by wages earned (piece rate) of original groups of 30 each; 19 in each group

selected for testing for whom the two methods agreed most closely. Final criterion: ranking (perhaps on basis of both criteria).

4. VALIDITY: correlation (probably rank order) of all tests and criterion:

Packers	.86 ± .04
Pipers	.84 ± .04

5. RELIABILITY: not given.

85

TAYLOR, W.: The application of intelligence tests to personnel in a retail store. *Australasian Journal of Psychology and Philosophy*, 1925, 3: 211–218.

1. SUBJECTS: 67 junior office staff.
2. TESTS: Otis Self-administering Test of Mental Ability.
3. CRITERION: rating by superiors on a 5-point scale (5 = poor, 1 = superior).
4. VALIDITY: ratings plotted against percentile attainment on test:

PERCENTILE	RATING				
	5	4	3	2	1
80–99			5	3	5
60–79	1		9	9	1
40–59		1	7	4	1
20–39		4	5	4	
0–19			6	1	1

5. RELIABILITY: not given.

86

VITELES, M. S.: Research in the selection of motormen, part II. *Journal of Personnel Research*, 1925–26, 4: 173–199.

1. SUBJECTS: 85 motormen.
2. TESTS: (1) Viteles Motorman Selection Test, (2) Dearborn Non-verbal Test of General Intelligence, (3) Morgan Mental Test, (4) M-104,

Viteles Common-sense Judgment Test, (5) M-105, Adaptation of Pressey X-O Test 1 (6) M-106, Adaptation of Pressey X-O Test 4.

3. CRITERION: rating by supervisors on a number of traits (median and average number of ratings per man: 4).
4. VALIDITY: Test 1: if critical score set at 10 errors, 12 are eliminated, and of these, 10 have less than a median rating on safety.

   Other tests showed no relationships to the criterion (graphs are given).
5. RELIABILITY: there was some discrepancy between ratings on safety and accident records (data not reported) in a small number of cases.

87

ARNOLD, R.: Beiträge zur Eignungsprüfung für das Tischlergewerbe. *Zeitschrift für angewandte Psychologie*, 1926, 25: 88–116. (Also in *Schriften zur Psychologie der Berufseignung und des Wirtschaftlebens*, 1925, 30. Pp. 31.)

1. SUBJECTS: 36 cabinet makers from 9 shops.
2. TESTS: (1) ability to judge straightness of a board, (2) ability to judge right angles, (3) ability to judge length of stroke with a plane, (4) space perception (Lipmann-Stolzenberg Test), (5) touch test (Schulze), (6) pairing blocks for evenness of surface by touch, (7) equality of pressure of 20 plane strokes.
3. CRITERION: classification by supervisor as good ($N = 16$), average ($N = 13$), and poor ($N = 7$).
4. VALIDITY: correlation (rank order) of test scores and criterion:

TESTS	CORRELATION
	.87
1	.79
2	.83
3	.81
4	.44
5	.72
6	.75
7	.90
Total test score..........	.

5. RELIABILITY: not given.

88

CROCKETT, A. C.: Testing apprentices for the Burroughs Adding Machine Company. *Journal of Personnel Research*, 1926–27, 5: 259–266.

1. SUBJECTS: 27 tool and die maker's apprentices.
2. TESTS: (1) tapping, (2) Link Card Sorting, (3) Army Alpha Examination: Test 1: Form 6, follow directions test, (4) rote memory (writing digits backwards, auditory presentation), (5) Crockett Formboard for Manual Dexterity, (6) Stenquist Mechanical Assembly Test, Form A, (7) Griffitts Match-board.
3. CRITERION: ratings of "mechanical ability" by 3 superiors.
4. VALIDITY: correlation of test scores and criterion:

	TEST SCORES							WEIGHTED
	1	2	3	4	5	6	7	TESTS
Combined ratings	−.04	.16	.29	−.10	.35	.09	.10	.18
P.E.	±.12	±.12	±.11	±.12	±.11	±.12	±.12	±.12
Time with company	.02	.25	.29	−.18	.10	.18	.00	.16
P.E.	±.12	±.12	±.11	±.12	±.12	±.12	±.12	±.12

5. RELIABILITY: intercorrelations among raters: .69 ± .06, .57 ± .08, and .66 ± .07.

Reliabilities of tests (last 2 trials correlated):

TEST	CORRELATION
1	.77 ± .05
2	.91 ± .02
3	.58 ± .08
4	.89 ± .02
5	.52 ± .09
6	.60 ± .02
7	.86 ± .03

89

Drabs, J.: Essai de psychogramme professionnel. Étude expérimentale sur les ouvriers maçons. *Journal de psychologie*, 1926, 23: 511–557.

1. SUBJECTS: 6 masons of various degrees of skill.
2. TESTS: (1) stereoscopic acuity, (2) perception of size, (3) perception of relative position, (4) visualization with graphic expression, (5) spatial precision, (6) visual sensorimotor attention, (7) oculomotor perception of volume, (8) motor memory of resistance and amplitude, (9) perception of movement and resistance, (10) aptitude in controlling motor effort, (11) spatial perception with choice, (12) spatial perception with motor adjustment, (13) concrete intelligence.
3. CRITERION: classification according to skill attained: Subjects 1 and 2 are chief masons and expert workmen, 3 is a mason and a very good worker, 4 is an ordinary mason, 5 is a good manual laborer, 6 is an average manual laborer.
4. VALIDITY: comparison of the total weighted test scores for the 6 subjects:

SUBJECT NUMBER	TOTAL WEIGHTED TEST SCORE	PER CENT
1	212	80
2	166	60
3	172	65
4	142	50
5	125	45
6	85	30

5. RELIABILITY: not given.

90

Eberle, E.: Eignungsprüfungen an Arbeiterinnen der chemischen Industrie. *Psychotechnische Zeitschrift*, 1925–26, 1: 165–171.

1. SUBJECTS: 56 packers of pharmaceuticals, female.
2. TESTS: (1) counting tablets, (2) counting paper packages, (3) sorting labels, (4) a sorting test, (5) determining midpoints of circles,

(6) Moede's Touch Test, (7) 'Number field of 10 to 49', after Poppelreuter, (8) visual acuity, (9) color vision.

3. CRITERION: rating by supervisors, 5-point scale, after 6 months.
4. VALIDITY: correlation (rank order) of test score (total?) and criterion: .88 ± .02.
5. RELIABILITY: not given.

91

FREYD, M.: Selection of promotion salesmen. *Journal of Personnel Research*, 1926–27, 5: 142–156.

1. SUBJECTS: 31 corporation stock salesmen.
2. TESTS: (1) copying a 5-inch line from memory, (2) Moore and Gilliland Aggressiveness Test: Mental Arithmetic, (3) Objections to Purchase Test, (4) Carnegie Institute Test of Business Information, (5) Downey Will-Temperament Test, Parts 3 and 9, (6) Kent-Rosanoff Test, (7) impulsive lines in signature, (8) a questionnaire of work traits. (13 other "tests" failed to discriminate.)
3. CRITERION: divided into 3 groups—successful, average, and failure —on basis of sales record plus judgment of assistant manager.
4. VALIDITY: correlation of total score with criterion: .84. Critical score of 40 eliminated all failures ($N = 9$), none of the successes ($N = 10$), all but one of the average ($N = 12$). Critical score of 12 eliminated 7 of 9 failures, 4 of 12 average, none of the successes.
5. RELIABILITY: not given.

92

GALLUP, G. H.: Traits of successful retail salespeople. *Journal of Personnel Research*, 1925–26, 4: 474–482.

1. SUBJECTS: 84 retail salespeople, department store.
2. TESTS: (1) Killian Graphic Rating Scale, rated by three superiors, (2) Hart's Confidential Personnel Rating Scale, rated by three superiors, (3) a card rating scale for 3 qualities, rated by three superiors, (4) Morgan's Mental Test, (5) Travis' Introvertive-Extrovertive Test, (6) a

battery of 8 tests especially designed for this study by Knight and Ohmann.

3. CRITERION: (1) ratings by education director, (2) total amount of sales for 4 months, weighted by departments.
4. VALIDITY: correlation of test scores and criterion 1:

TEST	CORRELATION
1	.66
2	.58
3	.46

Objective tests gave "indifferent results."

5. RELIABILITY: correlation of educational director's ratings with:

A rerating	.95
Buyer's estimates	.70
Weighted sales standard	.59

93

HINES, M., and O'CONNOR, J.: A measure of finger dexterity. *Journal of Personnel Research*, 1925–26, 4: 379–382.

1. SUBJECTS: 77 fine meter or instrument assemblers, female.
2. TESTS: O'Connor Test of Finger Dexterity.
3. CRITERION: (1) judgment of success or failure (by whom?), (2) termination.
4. VALIDITY: comparison of test scores and criteria:

QUARTILES (BASED ON 1021 CASES)	SCORE (MINUTES)	RATING		% TERMINATIONS (INCLUDING FAILURES)
		% SUCCESSFUL	% FAILURES	
1	0.–7.10	88	0	12
2	7.11–7.70	89	0	11
3	7.71–8.30	50	29	50
4	8.31 and up	40	40	60

5. RELIABILITY: not given. Reliability for test-retest ($N = 56$): .60 (product-moment correlation).

94

O'CONNOR, J.: *Tests for clerical employees.* New York: American Management Association, Office Executives Series No. 20, 1926, 3–6.

1. SUBJECTS: 200 clerks.
2. TESTS: O'Connor Number Checking Test.
3. CRITERION: successful or unsuccessful, presumably judged by supervisor (no further information).
4. VALIDITY: comparison of 100 who scored D on test with 100 who scored A on test:

TEST SCORE	NUMBER SUCCESSFUL
A	75
D	2

5. RELIABILITY: not given.

95

O'ROURKE, L. J.: Saving dollars and energy by personnel research: an investigation in the interest of the postal service. Part I: Procedure in effecting improvements. *Journal of Personnel Research*, 1925–26, 4: 351–364.

1. SUBJECTS: 124 post office employees, mail department.
2. TESTS: (1) U.S. Civil Service General Test, (2) U.S. Civil Service Sorting Test, (3) U.S. Civil Service Following Instructions Test.
3. CRITERION: efficiency record as measured by (1) average number of pounds of first-class mail distributed in 6 months, and time required, (2) records in a monthly case examination, (3) foreman's ratings.
4. VALIDITY: multiple correlation of tests and criterion: .72.

   Of those in top quartile on tests, 93 per cent are above average in efficiency.
5. RELIABILITY: not given.

96

O'ROURKE, L. J.: U.S. Civil Service Commission, 43rd Annual Report, 1926, LXXIV-LXXXVIII.

1. SUBJECTS: 100 policemen.
2. TESTS: (1) general adaptability, (2) ability to read the manual, (3) ability to classify offenses and decide upon appropriate action, (4) ability to recognize the logical sequence of actions, (5) ability to interpret the facts set forth in description of a crime situation.
3. CRITERION: composite efficiency ratings by captain, lieutenant, and sergeant (if they did not agree pretty well, S not included in group).
4. VALIDITY: comparison of per cent above or below average in efficiency ratings for various test scores:

TEST SCORES	EFFICIENCY RATINGS	
	ABOVE AVERAGE	BELOW AVERAGE
Highest 25%	100%	0%
Second 25%	56	43
Third 25%	31	68
Lowest 25%	0	100

5. RELIABILITY: not given.

97

PRUETTE, L.: The selection of girl cashiers. *Industrial Psychology*, 1926, 1: 277–279.

1. SUBJECTS: 2 groups: (a) 18 cashiers (department store), (b) "over 100."
2. TESTS: a standard group intelligence test, "supplemented in a few instances by individual tests."
3. CRITERION: Group a: average transactions per day. Group b: rating as superior, adequate, or inferior, presumably by superior.

4. VALIDITY: Group a: correlation between test scores and criterion: —.02. Group b: if one hired the middle 50 per cent on test score, this would eliminate 41 per cent of the inferior, 45 per cent of the adequate, and 58 per cent of the superior group.
5. RELIABILITY: not given.

98a

RUFFER, W.: Über die Organisation und Bewährung der Eignungsprüfung der Fabrik S der Oscram Kommanditgesellschaft G.m.b.H. *Industrielle Psychotechnik*, 1926, 3: 35–46.

1. SUBJECTS: 20 lamp solderers.
2. TESTS: (1) visual acuity, (2) visual distance, (3) speed, (4) reaction time, (5) easy tracing.
3. CRITERION: 3 weeks' production.
4. VALIDITY: correlation (rank order) between criterion and test scores:

TEST	CORRELATION
1	.28
2	.46
3	.29
4	.17
5	.07

5. RELIABILITY: not given.

98b

RUFFER, W.: Über die Organisation und Bewährung der Eignungsprüfung der Fabrik S der Oscram Kommanditgesellschaft G.m.b.H. *Industrielle Psychotechnik*, 1926, 3: 35–46.

1. SUBJECTS: 11 workers who stretch and tighten filaments in lamps.
2. TESTS: (1) visual acuity, (2) judgment of visual extent, (3) speed and exactness of work (*Molybdänstäbchenprobe*), (4) tremometer.
3. CRITERION: production and breakage records for 3 weeks.
4. VALIDITY: correlation (rank order) of test scores and criterion: .62 ± .13.
5. RELIABILITY: production for 1st and 2nd weeks: .84; 1st and 3rd weeks: .58; 2nd and 3rd weeks: .54.

99

Rupp, H.: Untersuchungen zur Fahrerprüfung bei der Deutschen Reichspost und bei der städtischen Strassenbahnen der Gemeinde Wien. *Psychotechnische Zeitschrift*, 1925–26, 1: 157–165, 199–219.

1. SUBJECTS: 9 drivers for the post office (no validation as yet for others).
2. TESTS: (1) Münsterberg's Test (numbers on a moving strip mean danger if in certain places and in red), (2) Modification of Münsterberg's Test: pictures of pedestrians, cyclists, autos, etc., mean danger if they are going toward the center, and if they are in certain rows.
3. CRITERION: rated as Good ($N = 3$), Average ($N = 3$), or Poor ($N = 3$) by supervisors.
4. VALIDITY: comparison of average test rating (5-point scale, 1 = best, 5 = worst) for the 3 criterion groups:

GROUP	TEST 1	TEST 2
Good	3.2	3.4
Average	3.1	3.0
Poor	2.6	2.9

(There are other tests discussed, but no validation is presented.)

5. RELIABILITY: not given.

100

Schulte, R. W.: *Psychotechnische Eignungsprüfungen im Schreibmaschinenbau.* Stuttgart: Enke, 1926. Pp. 47.

1. SUBJECTS: (a) 19 type aligners and inspectors, (b) 15 mechanics, typewriter manufacturing company.
2. TESTS: (1) a touch test, (2) adjustment of lines to parallel, (3) visual acuity, (4) concentration test, (5) cancellation test, (6) number-square test, (7) large number-square test, (8) wire bending test, (9) tapping test, (10) screwboard test, (11) bead test, (12) rod test (metal weights put into rod at top and caught at bottom; number of times in 1 minute), (13) speed of pushing down 2 keys, (14) visual estimation of angles, (15) visual estimation of lines, (16) counting tests A and B (dots and lines), (17) counting test C (lines), (18) technical intelligence.
3. CRITERION: rating by supervisor (not further elucidated).
4. VALIDITY: per cent agreement between test rank and criterion rank:

TEST	GROUP a	GROUP b
1	69.57%	75.58%
2	—	60.43
3	61.53	75.00
4	69.27	76.50
5	70.11	75.80
6	67.11	75.00
7	69.00	84.78
8	74.53	76.58
9	66.79	72.50
10	65.43	80.65
11	71.22	72.50
12	56.27	91.86
13	70.11	73.50
14	—	70.58
15	—	80.15
16	—	75.58
17	—	53.58
18	—	77.58

5. RELIABILITY: not given.

101

SHELLOW, S. M.: An intelligence test for stenographers. *Journal of Personnel Research*, 1926–27, 5: 306–308.

1. SUBJECTS: 24 stenographers.
2. TESTS: (1) an intelligence test, using terms and problems familiar to stenographers, (2) a standardized trade test for stenographers.
3. CRITERION: ranking by the author in terms of difficulty of work handled, ability shown in handling it, satisfaction of employers, and salary.
4. VALIDITY: correlation between test score and criterion:

TEST	*N*	CORRELATION
1	24	.73 ± .06
2	16	.48 ± .13
1 and 2 combined score	16	.59 ± .11

Multiple correlation of criterion, tests 1 and 2: .83.

5. RELIABILITY: not given.

102

SHELLOW, S. M.: Selection of motormen: further data on value of tests in Milwaukee. *Journal of Personnel Research*, 1926–27, 5: 183–188.

1. SUBJECTS: 2 groups: (a) 163 unselected motormen, (b) 166 selected motormen.
2. TESTS: Viteles Motorman Selection Test (given to Group b only).
3. CRITERION: turnover and discharge due to accidents.
4. VALIDITY: comparison of selected (by means of the test) and unselected groups:

	GROUP a		GROUP b	
	N	PER CENT	*N*	PER CENT
Motormen employed	163	100	166	100
With company after one year	98	60	118	72
Resigned	27	16.6	33	20
Discharged	35	22.7	10	5.4
Discharged, due to accidents	23	14.1	1	0.6
Discharged, other causes	12	7.2	9	4.8

5. RELIABILITY: not given.

103

SNOW, A. J.: Tests for chauffeurs. *Industrial Psychology*, 1926, 1: 30–45.

1. SUBJECTS: 311 applicants for job as cab drivers.
2. TESTS: (1) an intelligence test, (2) a test of emotional stability.
3. CRITERION: accident rate.

4. VALIDITY: comparison of accident rate for 3 groups, grouping on basis of test scores:

PREDICTION FROM TEST SCORES	*N*	AVERAGE NUMBER ACCIDENTS PER MAN	PER CENT HAVING ACCIDENTS	PER CENT WHO QUIT
Unsatisfactory	34	1.00	64	19
Will not stay	19	.16	33	33
Satisfactory	258	.20	33	20

5. RELIABILITY: not given.

104

WALTHER, L.: Some experiments in vocational psychophysiology. *International Labour Review*, 1926, 14: 54–71.

1. SUBJECTS: 11 paper bag makers.
2. TESTS: (1) discs, (2) cutting-out test, (3) squares, (4) tapping, (5) beads.
3. CRITERION: output.
4. VALIDITY: rank in output compared with average rank on the five tests:

OUTPUT RANK	TEST RANK
1	1
2	3
3	4
4	5
5	6
6	7
7	9
8	8
9	2
10	10
11	11

5. RELIABILITY: not given.

105

WEBER, C. O., and LESLIE, M.: Clerical tests agree with employer's ratings. *Industrial Psychology*, 1926, 1: 708–711.

1. SUBJECTS: 3 groups: (a) 28 stenographers, clerks, accountants, and filing clerks (not separated), (b) 25 clerks, (c) 33 accountants.
2. TESTS: Thurstone Test for Clerical Work.
3. CRITERION: Group a: employer's estimates. Groups b and c: classified by superiors into 5 grades.
4. VALIDITY: Group a: correlation between test scores and employer's estimates: .69.

   Group b: correlation between test scores and employer's ratings: .59; speed: .38; accuracy: .69.

   Group c: correlation between test scores and employer's ratings: .35; speed: .07; accuracy: .26.
5. RELIABILITY: not given.

106

WECHSLER, D.: Tests for taxicab drivers. *Journal of Personnel Research*, 1926–27, 5: 24–30.

1. SUBJECTS: taxicab drivers, N varies, 135 to 35.
2. TESTS: (1) Test It: a general intelligence test, (2) Test D and De: a reaction-time and carefulness test (apparatus).
3. CRITERION: "record" based on: number of accidents, number of merits, average daily revenue, revenue per cab mile, etc.
4. VALIDITY: comparison of test score and criterion:

TEST 1

($N = 135$)

TEST SCORE	PER CENT AVERAGING LESS THAN 18 CENTS PER CAB MILE
Under 50	18.2
50–60	12.2
Over 60	8.9

TEST 2, DE
($N = 35$)

ERROR SCORE ON TEST	PER CENT OF MEN HAVING NO ACCIDENTS
0	46.1
1–3	18.8
4 and over	12.5

TEST 2, D
($N = 35$)

SCORE ON TEST	PER CENT OF MEN HAVING NO ACCIDENTS
Under 60	18.2
60–80	36.9
80 and over	14.3

5. RELIABILITY: not given.

107

BARTLETT, E. D.: A test to gauge business knowledge. *Personnel Journal*, 1927–28, 6: 199–204.

1. SUBJECTS: 50 employees of a large oil company: accountants, statisticians, etc. (exact nature not stated, but test given to those applying for positions of responsibility).
2. TESTS: Business Test "R."
3. CRITERION: (1) rating of business knowledge by 2 members of the personnel department, (2) salary.
4. VALIDITY: correlation (product moment) of test scores and criteria:

CRITERION	CORRELATION
1	.79
2	.37

5. RELIABILITY: not given.

108

BÜLTMANN, W.: Psychotechnische Berufseignungsprüfung von Giessereifacharbeitern. *Industrielle Psychotechnik*, 1927, 4: 161–173.

1. SUBJECTS: 2 groups: (a) 12 molders in a foundry, (b) 11 molders in foundries.
2. TESTS: (1) hand steadiness: slow rod lifting, (2) hand steadiness: rod put into 20 holes as fast as possible, (3) an apparatus to measure the pressure which S exerts against it: 5 trials, S to exert same pressure each time, (4) test of finger pressure, (5) dynamometer, (6) color test: S to set lamp to color of stiffening iron, (7) temperature sense: how hot S can stand water in which 2 fingers are dipped, (8) spatial ability: block building, (9) spatial ability: relationships among printed figures, (10) memory for form, (11) cancellation of forms, (12) building a pile of blocks.
3. CRITERION: Group a: judgment of supervisor, bonus and spoilage figures; rank. Group b: a complex judgment of job success, exact components not given; rank.
4. VALIDITY: correlation between job rank and total weighted test score: Group a: .98; Group b: .83 ± .07 (Test 10 omitted with this group).
5. RELIABILITY: not given.

109

DRILL, R.: Eignungsprüfung für die Kommunale Feuerwehr. *Industrielle Psychotechnik*, 1927, 4: 289–301.

1. SUBJECTS: 23 firemen, hired by test, evaluated 9 months later.
2. TESTS: (1) hand dynamometer, (2) hand ergograph, (3) arm steadiness and endurance, (4) hand steadiness, tremometer, (5) manual skill (test: Wickelkugel), (6) tapping, (7) Moede's two-hand test, (8) hand sureness: 10 blows of a hammer in the middle of a circle, (9) weight lifting, (10) reaction time, (11) visual acuity, (12) color vision, (13) judg-

ment of extent, (14) estimate of distance, (15) estimate of dimensions of objects, (16) auditory acuity, (17) auditory localization, (18) perception of words, numbers, forms, and colors, (19) attention: Bourdon's test, Moede's concentration test, and observation of a picture, (20) Mosselon combination test, (21) climbing a ladder, going over a roof, etc., (22) smoky room test, (23) technical ability: use of a piece of equipment, assembling a piece of equipment, (24) electrical circuit test, (25) recognition of various materials, (26) judging strength of lights, (27) finding a telephone number, (28) finding a street on a city map, (29) finding shortest route to 10 addresses, (30) measuring room and calculating square and cubic footage.

3. CRITERION: judgment of supervisor 9 months after hiring: (1) ranking, (2) rating by questionnaire.

4. VALIDITY: rank-order correlations between success on the job and test score. It is not clear whether all tests are used in the calculations. Criterion 1: Rho = .91 ± .03 for total test score; for individual tests rho ranges from −.10 to .72. Criterion 2: Rho = .64 ± .09 for total test score.

5. RELIABILITY: correlation between ranking by the supervisor and rating on a questionnaire by the same individual: .80 ± .05

110

HALL, M.: Untersuchungen zur Lehrlingsauslese für kaufmännische Büroberufe, *Psychotechnische Zeitschrift*, 1927, 2: 128–144.

1. SUBJECTS: 3 groups: (a) 18 apprentice clerks, (b) 50 apprentice clerks, (c) 35 apprentice clerks.

2. TESTS: (1) verbal intelligence, (2) logical thought, (3) 2 memory tests, (4) arithmetic ability, (5) Bourdon's Cancellation Test, (6) presence of mind, (7) sorting, (8) address book test. Also school grades, and trade school grades.

3. CRITERION: employer answered a questionnaire, author rated each S on 4-point scale.

4. VALIDITY: correlation (rank order) of test scores and criterion:

TESTS	CORRELATION
Group a: 2, 5, 8, marks in arithmetic and German penmanship	.76 ± .07
Group b: 2, 5, 8, marks in arithmetic and German penmanship	.54 ± .07
All tests	.44 ± .08
School grades	.24 ± .09
Trade school grades	.50 ± .07
Group c: 2, 5, 8, marks in arithmetic and German penmanship	.33 ± .10
All tests	.29 ± .10
School grades	.24 ± .11
Trade school grades	.31 ± .10

5. RELIABILITY: not given.

111

HILGERS, W. E., and WOHLFEIL, T.: Eignungsprüfung von technischen Assistentinnen an medizinischen Institut. *Industrielle Psychotechnik*, 1927, 4: 10–18.

1. SUBJECTS: 10 apprentice medical technicians (appears to be a selected group).
2. TESTS: (1) speed of perception, visual, (2) mechanical and logical thinking, (3) letter cancellation, (4) arithmetic, (5) an essay, (6) errors in a text, (7) assembling a cube, (8) filling 8 test tubes to the same height with dry peas, (9) drawing a number of objects.
3. CRITERION: ranking by the doctor, the assistant chemists, and the older apprentices; pooled ranking of all.
4. VALIDITY: correlation between rank on the job and test rank: .56 ± .16.
5. RELIABILITY: not given.

112

JOHNSON, T. R.: Reducing deliverymen's mistakes. *Industrial Psychology*, 1927, 2: 8–11.

1. SUBJECTS: 31 deliverymen.
2. TESTS: A group test of mental ability.

3. CRITERION: rating by supervisor and 3 assistants (final rating is average of 4).
4. VALIDITY: comparison of test scores for the three groups:

GROUP	*N*	AVERAGE TEST SCORE
Good	5	47
Average	21	35
Poor	5	20

With a minimum critical score at 25, 5 men failed the test and of these, 4 were rated poor and one average. With a maximum critical score of 47, 3 out of 4 scoring above this terminated, and the fourth was promoted.

5. RELIABILITY: not given.

113

LAHY, J. M.: Méthode de mise au point et d'étalonnage d'un test d'aptitude professionnelle: le test du tourneur. *Journal de psychologie*, 1927, 24: 356–369.

1. SUBJECTS: 10 lathe operators in a small firm.
2. TESTS: an apparatus test designed to measure the degree to which the 2 hands can be moved independently.
3. CRITERION: judged by chief engineer and manager of the firm as Good or Poor; 5 were Good, 5 Poor.
4. VALIDITY: comparison of test rank and criterion: "perfect agreement."
5. RELIABILITY: not given.

114

LAHY, J. M.: *La sélection psychophysiologique des travailleurs—conducteurs de tramways et d'autobus*. Paris: Dunod, 1927. Pp. xiii + 240.

1. SUBJECTS: 150 tram drivers, 3 groups of 50 each.
2. TESTS: (1) suggestibility (motor), (2) reaction time, (3) diffuse attention (visual stimuli), (4) diffuse attention (visual and auditory stimuli).

3. CRITERION: judgments of 2 inspectors, on basis of performance on the job.
4. VALIDITY: coefficient of contingency between classification on basis of test scores and criterion:

Group a..........	.65
Group b..........	.90
Group c..........	.70

5. RELIABILITY: not given.

115

LAMPARTER, H.: Untersuchung über Zusammenhänge Schulleistung und Werkstattleistung an Lehrlingen der Maschinenfabrik Weingarten. *Psychotechnische Zeitschrift*, 1927, 2: 37–41.

1. SUBJECTS: 2 groups: (a) 28 metal worker's apprentices, (b) 14 more advanced metal worker's apprentices.
2. TESTS: trade school performance: ranking by teachers.
3. CRITERION: Group a: one work sample made in the shop, ranked by "master." Group b: 4 work samples made in the shop, ranked by the "master."
4. VALIDITY: correlation (rank order) between test rank and criterion rank:

Group a..........	.72 ± .06
Group b..........	.77 ± .08

5. RELIABILITY: not given.

116

MERRILL, M. A.: Intelligence of policemen. *Journal of Personnel Research*, 1926–27, 5: 511–515.

1. SUBJECTS: 30 policemen, selected on basis of test scores and other factors.
2. TESTS: Army Alpha Examination.

3. CRITERION: rating by chief, 5-point scale, 12 different traits.
4. VALIDITY: correlation (rank order) between test score and criterion: .23. Probable error: .18.
5. RELIABILITY: not given.

117

POND, M.: Selective placement of metal workers. III. Selection of toolmaking apprentices. *Journal of Personnel Research*, 1926–27, 5: 452–466.

1. SUBJECTS: 105 toolmaking apprentices.
2. TESTS: Scovill Classification Test.
3. CRITERION: rating by foreman, 4-point scale.
4. VALIDITY: correlation of subtest scores and criterion:

SUBTEST	CORRELATION (WITH PROBABLE ERROR)
4	.34 ± .06
8	.01 ± .07
2—errors	−.23 ± .06
Age	.18 ± .06
1, 2, 3, 4, 8, errors in 2, and age	.48 ± .05

Per cent satisfactory in several test score groups (combined scale of subtests 1, 2, 3, 4, 8, errors in 2, and age):

SCORES	N	PER CENT SATISFACTORY	
246–342	12	8	23
343–416	27	30	
417–441	25	68	82
442–483	32	88	
484–519	9	100	
TOTAL	105	60	

Difference between per cent satisfactory in preferred range and per cent satisfactory in whole group, divided by standard error: 5.9.

5. RELIABILITY: not given.

118

SMITH, M., CULPIN, M., and FARMER, E.: *A study of telegraphist's cramp.* Great Britain Medical Research Council, Industrial Fatigue Research Board, Report No. 43, 1927. Pp. 40.

1. SUBJECTS: 87 telegraphers.
2. TESTS: (1) pressure exerted in sending, (2) dotting, (3) ergograph: *a*—number of contractions, *b*—number of contractions in 10 mm., *c*—average height of contractions, (4) combined tests, (5) diagnosis of neurosis.
3. CRITERION: comparison of group who cramp with group which does not: 41 "cramp," 46 "noncramp" telegraphers. Percentage in each of 4 pressure groups: A, least, D, most pressure exerted.
4. VALIDITY: comparison of "cramp" and "noncramp" subjects in each of 4 pressure groups:

	PRESSURE				DOTTING			
Group	A	B	C	D	A	B	C	D
Noncramp	13	58.7	19.6	8.6	19.6	39.2	32.6	8.7
Cramp	4.9	46.3	27.0	22.0	4.9	14.7	39.2	41.5

	ERGOGRAPH *a*				ERGOGRAPH *b*			
	A	B	C	D	A	B	C	D
Noncramp	24.0	39.5	13.1	24.0	18.4	42.1	31.6	7.9
Cramp	0	33.3	27.3	39.4	12.1	18.2	36.3	33.3

	ERGOGRAPH *c*				TESTS COMBINED			
	A	B	C	D	A	B	C	D
Noncramp	29.1	63.2	5.3	2.6	41.3	30.4	23.7	4.3
Cramp	27.3	30.3	30.3	12.1	17.0	19.5	26.8	36.5

GROUP	DIAGNOSIS OF NEUROSIS		
	NO NEUROSIS	NEUROSIS PRESENT	
Noncramp	30	15	(1 had organic lesion)
Cramp	9	31	(1 psychotic)

5. RELIABILITY: not given.

119

Snow, A. J.: Intelligence in labor turnover in the taxicab industry. *Industrial Psychology*, 1927, 2: 191–195.

1. SUBJECTS: 811 men hired as cab drivers.
2. TESTS: a specially devised intelligence test.
3. CRITERION: comparison of labor turnover in groups passing and failing test.
4. VALIDITY: critical score on test set at 25. 20 per cent of the group failed to reach this score. Comparison of group scoring above 25 with group scoring below 25:

	DID NOT REPORT	LEFT WITHIN 1 MONTH	DID NOT REPORT AFTER TRAINING	STILL WORKING
Score above 25	7%	13%	8%	72%
Score below 25	28	28	26	18

5. RELIABILITY: not given.

120

Stolley, G.: Psychotechnische Eignungsprüfung der Schneiderin. *Industrielle Psychotechnik*, 1927, 4: 369–379.

1. SUBJECTS: 34 apprentice dressmakers (one other rejected for study because the great discrepancy between test score and performance said to be due to laziness and going out every night).
2. TESTS: (1) Ebbinghaus's incomplete text, (2) spatial ability: *a*—fitting missing piece into a figure, *b*—putting together a dress from jigsawed pieces, (3) memory for form, (4) following directions from memory, (5) good taste: altering figure in test 2*b* to make best-looking dress by changes in color of pieces, (6) vision: *a*. Heydt-Couvé optometer, *b*. Herwig's parallel line apparatus, (7) visual acuity, Snellen, (8) color vision, Stilling, (9) Schulte touch test, (10) Herwig joint sensitivity test for fingers, (11) Moede wire bending, (12) nimbleness of hand: Moede's *Wickelkugel* (winding string around the pegs on a ball), (13) two-hand tasks: *a*—Herwig's two-hand test, *b*—Cauer's cut-out

test, (14) Moede's tremometer, (15) finger dexterity: *a*—threading beads, *b*—knot tying.

3. CRITERION: judgment of a job sample: making a doll's dress. Judgment of superiors tried, but found too unreliable; no figures cited.
4. VALIDITY: rank on job sample correlated with rank in tests: .60; five times the probable error is .42. Single test showing highest correlation was Test 11: *rho* = .63; .37 is 5 times the probable error.
5. RELIABILITY: not given.

121

STRONG, E. K., JR.: Differentiation of certified public accountants from the occupational groups. *Journal of Educational Psychology*, 1927, 18: 227–238.

1. SUBJECTS: 36 members of an advertising agency.
2. TESTS: Cowdery's Interest Analysis Blank; Advertising Agency "Account Executive" Key.
3. CRITERION: rating by 3 raters on "account executive" standing, 3-point scale.
4. VALIDITY: comparison of per cent scoring A, B, and C on test for various rating scores:

RATING	PER CENT A	PER CENT B	PER CENT C
2.0	73	27	0
1.7	71	29	0
1.3	50	50	0
1.0	27	73	0
0.7	0	67	33
0.3	0	0	100

5. RELIABILITY: not given.

122

BARTHELMESS, H. M., and BOYER, P. A.: A study of the relationship between teaching efficiency and amount of college credit earned while in service. *Educational Administration and Supervision*, 1928, 14: 521–535.

1. SUBJECTS: teachers, Philadelphia Public Schools: (a) 5,002 elementary, (b) 1,220 junior high school.

2. TESTS: (1) length of teaching experience, (2) number of hours of college credit taken while in service.
3. CRITERION: efficiency rating by principal.
4. VALIDITY: correlation of "test scores" and criterion:

TEST	GROUP a	GROUP b
1	.27	.36
2	.16	.19
2—experience constant	.12	.08
$1 + 2$	.30	.36

5. RELIABILITY: not given.

123

BECKNELL, H. E.: Predicting success of Y.M.C.A. secretaries. *Personnel Journal*, 1928–29, 7: 172–175.

1. SUBJECTS: 172 general secretaries of the Y.M.C.A.
2. TESTS: a personal history blank.
3. CRITERION: ranking by 5 supervisors.
4. VALIDITY: comparison of per cent above and below a critical score of 440 on test for each quartile, based on composite rank:

	QUARTILE			
	4	3	2	1
Per cent above critical score	88.1	69.9	51.2	18.6
Per cent below critical score	11.9	30.1	48.8	81.4

5. RELIABILITY: not given.

124

BOARDMAN, C. W.: Professional tests as measures of teaching efficiency in high schools. Columbia University, Teachers College Contributions to Education, No. 327, 1928. Pp. 85.

1. SUBJECTS: 88 high school teachers.
2. TESTS: (1) American Council on Education Psychological Examination, (2) a professional information test, (3) a test of procedures in teaching.

3. CRITERION: rating by supervisors on teaching ability or efficiency, ranking by associates, ranking on 5 points by pupils; combined score.
4. VALIDITY: correlation between criterion and test scores:

TEST	CORRELATION
1	.33 ± .10
2	.26 ± .10
3	.28 ± .10
All 3 (total score)....	.34 ± .10

5. RELIABILITY: correlation between chance halves of teacher rankings by: (1) supervisors: .92, (2) associates: .72, (3) pupils: .78.

125

BÜLTMANN, W.: *Psychotechnische Berufseignungsprüfung von Giessereifacharbeitern.* Berlin: Springer, 1928. Pp. 78.

1. SUBJECTS: 3 groups of pattern maker's apprentices, iron foundry: (a) 12, (b) 11, (c) 12.
2. TESTS: (1) hand steadiness, (2) inserting rod in 20 holes rapidly, (3) push 5 times with same strength, (4) finger pressure, (5) hand pressure, (6) color of lamp, (7) block building, (8) a spatial relations test (paper and pencil), (9) cancellation of forms, (10) a block test.
3. CRITERION: judgment of superiors (no further information).
4. VALIDITY: correlation (rank order) of criterion and test scores:

Group a

TEST	CORRELATION
1 and 2	.84 ± .06
3	.50 ± .16
4	.78 ± .10
5	.79 ± .08
6	.60 ± .14
7	.88 ± .05
8	.73 ± .10
9	.94 ± .02
10	.79 ± .08

Total weighted score correlated with criterion:

Group b........	.83 ± .07
Group c........	.90 ± .04

5. RELIABILITY: not given.

126

ERSCHOWITZ, N.: Zur Frage der Bewährung von Handegeschicklichkeitsproben. *Psychotechnische Zeitschrift*, 1928, 3: 23–26.

1. SUBJECTS: 39 locksmith's apprentices from 2 machine shops.
2. TESTS: (1) wire bending, (2) Moede's two-hand Test, (3) Moede's Tremometer.
3. CRITERION: rating by foreman (questionnaire).
4. VALIDITY: correlation (rank order) between criterion and test scores:

TEST	CORRELATION
1	.84 ± .03
2	.80 ± .05
3	.81 ± .04

5. RELIABILITY: not given.

127

JACOBS, C. L.: The relation of the teacher's education to her effectiveness. Columbia University, Teachers College Contributions to Education, No. 277, 1928. Pp. 97.

1. SUBJECTS: 100 teachers, elementary (first 6 grades), out of 406, one school system (at least 2 years' experience).
2. TESTS: hours of training in each subject (from educational records).
3. CRITERION: rating by principals; composite score of graphic, descriptive, and rank methods.
4. VALIDITY: critical ratios of the differences found to be reasonably significant; groups compared are 50 from lowest quartile of ratings and 50 from upper quartile.

Difference in favor of upper group:

SUBJECT	CRITICAL RATIO
Primary education	2.33
General methods	2.91
Practice teaching	3.71
Constitution	3.50
Manual training	6.50
Biology	1.51
Home economics	2.22
Gymnasium	2.57

Difference in favor of lower group:

SUBJECT	CRITICAL RATIO
History of education	2.74
Educational psychology	1.71
Sociology	2.21
Political science	2.22
Drawing	2.80
Agriculture	3.23
Hygiene	1.65
Music	1.76

(There is a known selective factor operating for "Constitution," now required by law, which was passed after these teachers were through college or normal school.)

5. RELIABILITY: intercorrelations (product moment) of the 3 methods of rating:

Graphic vs. descriptive: .70 ± .02
Descriptive vs. rank: .56 ± .03
Rank vs. graphic: .54 ± .03

128

KNOOP, W.: Die Eignungsprüfung der Beamtinnen für die Autoruf A.-G. *Industrielle Psychotechnik*, 1928, 5: 143–146.

1. SUBJECTS: 24 women handling calls from a taxi-call-station.
2. TESTS: (1) Ebbinghaus's incomplete text, (2) memory for letters, numbers,

and signs, (3) Bourdon test, (4) writing numbers, (5) speed of speech, (6) speed of writing.

3. CRITERION: rating by superiors on a 4-point scale.
4. VALIDITY: comparison of ratings by superiors with rating on tests on a 4-point scale:

	TEST RATING (*N*)	JOB RATING
1. Very good	11	4 went down to "2," 1 to "3," 1 to "4"
2. Good	11	2 went up to "1"
3. Satisfactory	2	2 went up to "2"
4. Inferior	0	

5. RELIABILITY: not given.

129

O'CONNOR, J.: *Born that way*. Baltimore: The Williams and Wilkins Company, 1928. Pp. 323.

1. SUBJECTS: 63 college graduates, male, applicants for accounting positions, selected by usual personnel routine, but not by test.
2. TESTS: O'Connor Number-checking Test.
3. CRITERION: rating by department head.
4. VALIDITY: at end of 1 year's employment, 40 of the 63 were rated excellent; of these 40, 70 per cent rated A on test, and none rated D. Half of those rating D on test (*N* not given) had resigned or been discharged.
5. RELIABILITY: not given.

130

PYLE, W. H.: The relation between intelligence and teaching success: a supplementary study. *Educational Administration and Supervision*, 1928, 14: 257–267.

1. SUBJECTS: 105 teachers in public schools (sometimes fewer).
2. TESTS: Detroit Advanced Intelligence Examination.
3. CRITERION: success as estimated by the principals.
4. VALIDITY: correlation between test score and teaching success:

First year teaching success: −.03 ± .07
Second year teaching success: .02 ± .07

5. RELIABILITY: not given.

131

ROLOFF, H. P.: Über Eignung und Bewährung. *Zeitschrift für angewandte Psychologie*, Beiheft 41, 1928. Pp. 148.

1. SUBJECTS: 3 groups: (a) 12 machinist's apprentices, (b) 8 machinist's apprentices, (c) 12 apprentice turners (selected from *much* larger groups and chosen to represent all grades of apprentices, best to worst).
2. TESTS: (1) estimation of visual extents (3 tests), (2) muscle and joint sensitivity (4 tests), (3) skill with hands (5 tests), (4) speed of perception and reaction (3 tests), (5) five tests involving spatial relations, (6) technical knowledge (3 tests), (7) verbal and logical intelligence (3 tests), (8) touch sensitivity, (9) mirror drawing.
3. CRITERION: judgment of superiors.
4. VALIDITY: correlation of test rank and job rank:

	TEST GROUPS									
	1	2	3	4	5	6	7	8	9	All
a	.14	.53	.63	.45	.76	.61	.83	−.02	.49	.78
b	.68	.34	.74	.76	.76	.81	.85	.71	.30	.86
c	.58	.38	.50	.17	.76	.69	.28	.20	.46	.84

5. RELIABILITY: not given.

132

TIEGS, E. W.: *An evaluation of some techniques of teacher selection*. Bloomington, Ill.: Public School Publishing Company, 1928. Pp. 108.

1. SUBJECTS: 25 first-year teachers of grade schools in Minneapolis.
2. TESTS: (1) recommendations, (2) photographs, (3) letters of application, (4) complete record as filed with Board of Education.
3. CRITERION: official ratings by supervisors after 6 months of teaching.
4. VALIDITY: correlation (rank order) of test scores and criterion:

TEST	CORRELATION
1	.08
2	−.08
3	−.04
Composite	−.13
4	.27

5. RELIABILITY: correlations between rankings by 5 judges on recommendations, range: −.37 to .78; between first and second ranking of recommendations, range: .00 to .37.

133

VERDOLLIN, H. Psycho-technical selection of employees in Paris. *Electric Railway Journal*, 1928, 71: 742–743.

1. SUBJECTS: 50 streetcar conductors (Paris).
2. TESTS: (1) reaction time, (2) resistance to fatigue, (3) several tests of memory, (4) a written intelligence test, (5) estimating number of passengers on platform in brief presentation of pictures.
3. CRITERION: service records.
4. VALIDITY: comparison of criterion and classification by total test scores:

CRITERION GROUP	*N*	TEST GROUP	
		GOOD	POOR
Good	24	22	2
Fair	15	9	6
Mediocre	4	0	4
Poor	7	1	6

5. RELIABILITY: not given.

134a

ANDERSON, V. V.: *Psychiatry in industry*. New York: Harper and Brothers, 1929. xv + 364, pp. 222–243.

1. SUBJECTS: 284 sales clerks, department store, selected on basis of selling cost.

2. TESTS: (1) personal data, (2) an intelligence test (not specified). (Numerous ratings of personality traits omitted because no basis for ratings given.)
3. CRITERION: comparison of high-cost (upper 25 per cent) and low-cost groups (lowest 25 per cent). Middle 50 per cent of sales clerks in the store had been eliminated from study.
4. VALIDITY: comparison of low-cost and high-cost employees:

	LOW-COST	HIGH-COST
Schooling:		
Grammar	60.5%	59.0%
High school, 1–2 years	18.3	23.2
High school, 3–4 years	16.1	11.2
College	5.1	6.6
Marital status:		
Single	52.8	65.3
Married	25.0	23.2
Widowed	15.7	3.5
Separated	6.5	8.0
Selling experience:		
Extensive	68.3	60.0
Average	17.6	22.3
Limited	14.1	17.7
Intelligence:		
Superior	5.6	4.2
Average	46.4	36.6
Dull average	33.8	36.7
Subnormal	11.3	19.6
Borderline	2.9	2.9
Height:		
Tall	18.1	24.3
Average	42.0	36.3
Short	39.9	39.4
Weight:		
Underweight	16.4	31.3
Average	49.2	36.3
Overweight	34.4	21.0

5. RELIABILITY: not given.

134b

ANDERSON, V. V.: *Pyschiatry in industry.* New York: Harper and Brothers, 1929. xv + 364, pp. 243–256.

1. SUBJECTS: 100 sales clerks, department store (selected as 50 best and 50 worst in typical departments of the store).
2. TESTS: (1) personal data, (2) intelligence test (not specified). (Other traits omitted because basis for classification not given.)
3. CRITERION: presumably judgment of superiors.
4. VALIDITY: comparison of the two groups. Age: 5 times as many Worst Employees as Best Employees were below 20 years of age; 87 per cent of Best Employees between 25 and 40 years of age.

   Schooling: 60 per cent of Best clerks had grammar school education only, 40 per cent of Worst clerks had high school education; 10 per cent of Worst clerks had college education, whereas only 4 per cent of Best clerks had college education.

   Marital status: widowed employees more frequent in Best than in Worst group.

   Selling experience: 78 per cent of Best group and 72 per cent of Worst group had extensive experience; 22 per cent of Best group and 24 per cent of Worst group had average experience.

INTELLIGENCE	BEST GROUP	WORST GROUP	500 UNSELECTED CLERKS
Superior	5	1	27
Average	21	17	203
Dull average	18	14	172
Subnormal	5	17	78
Borderline	1	1	20

5. RELIABILITY: not given.

134c

ANDERSON, V. V.: *Psychiatry in industry.* New York: Harper and Brothers, 1929. xv + 364, pp. 307–309.

1. SUBJECTS: 144 cashiers in a department store.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) cashier's

arithmetic test, (3) number cancellation, (4) similarities and differences, (5) number finding, (6) card sorting, (7) peg test, (8) carrier-till test.

3. CRITERION: (1) number of transactions handled, (2) number of errors per 1,000 transactions, (3) time studies on the job, and (4) ratings by department heads.
4. VALIDITY: correlation of test scores and two of the criteria. Criterion 3:

TEST	CORRELATION
5	.47
4	.15
6	.24
8	.60
Composite...	.65

Criterion 2: composite of Tests 3, 4, 8, and 2 = .63.

5. RELIABILITY: not given.

135

BRAUNSHAUSEN, N.: Sélection des employés de bureau. *Revue de la science du travail*, 1929, 1: 499–512.

1. SUBJECTS: 200 office workers of various types (total N not included in all tests; a selected sample).
2. TESTS: (1) an intelligence test (*a*—generalization, *b*—analogies, *c*—reasoning, *d*—completion, *e*—numerical reasoning, *f*—syllogisms), (2) test for memory (*a*—memory for numbers, *b*—memory for names).
3. CRITERION: (1) rating by supervisor, after some time on the job, 5-point scale, on: *a*—aptitude, *b*—work habits, *c*—character; (2) a job sample.
4. VALIDITY: Yule's coefficient of association between total score and criterion (tests not reported separately):

Job sample and ratings ($N = 200$): .41
Tests and job sample ($N = 137$): .55

Job sample and ratings ($N = 137$): .56
Tests and ratings ($N = 137$): .18
Job sample and tests vs. ratings ($N = 28$, selected by test): .52.

5. RELIABILITY: not given except as correlation between ratings and job sample, given above: .41.

136

EARLE, F. M., MACRAE, A., *et al. Tests of mechanical ability.* National Institute of Industrial Psychology, Report No. 3, 1929. Pp. 42.

1. SUBJECTS: 4 groups: (a) 20 fitter's apprentices, (b) 18 carpenter's apprentices, (c) 16 smith's apprentices, (d) 21 electrician's apprentices.
2. TESTS: a mechanical ability test (reputed to be Stenquist Mechanical Assembly Test).
3. CRITERION: rankings for proficiency by shop instructors.
4. VALIDITY: correlation between instructor's ranking and test scores:

GROUP	AT END OF COURSE	HALFWAY THROUGH COURSE
a	.66 ± .08	.49 ± .11
b	—	.82 ± .05
c	.16 ± .16	.37 ± .15
d	.23 ± .14	.07 ± .15

5. RELIABILITY: not given.

137

GEMELLI, A.: Recherches sur le diagnostic de l'habileté motrice. *Revue de la science du travail*, 1929, 1: 181–196.

1. SUBJECTS: 2 groups: (a) 35 spinners, (b) shoe "lasters," N not given.
2. TESTS: (1) Moede's Impulsimeter, (2) Steadiness Test I, (3) Steadiness Test II, (4) dotting, (5) tapping, (6) discs test (Institut J.-J. Rousseau), (7) bead test (Kraepelin), (8) NIIP disc test, (9) NIIP pegboard, (10) dyna-

mometer, (11) diffuse attention, (12) reaction time; (13), (14), (15), and (16) were 4 tests similar to operations performed on the job.

3. CRITERION: foreman's judgment.
4. VALIDITY: correlation of test score and criterion:

TEST	CORRELATION	P.E.
	Group a	
1	.21	.13
2	.10	.12
3	.09	.10
4	.16	.12
5	.15	.11
6	.12	.13
7	.16	.11
8	.21	.13
9	.12	.10
10	.07	.08
11	.28	.12
12	.35	.11
13	.71	.12
14	.68	.13
15	.85	.09
16	.90	.10
	Group b	
1	.25	.11
2	.39	.13
3	.27	.09
4	.11	.14
5	.18	.10
6	.29	.12
7	.26	.07
8	.14	.11
9	.27	.12
10	.02	.12
11	.22	.10
12	.26	.06

5. RELIABILITY: not given.

138

Ho, C. J.: Personnel studies of section managers in a department store. *Personnel Journal*, 1929–30, 8: 225–231.

1. SUBJECTS: 107 section managers in a large department store.
2. TESTS: (1) personal data, (2) an intelligence test (not specified).
3. CRITERION: ratings by floor superintendents; grouped into Good, Fair, and Poor.
4. VALIDITY: comparison of groups for various personal history items and test scores:

ITEM	GROUP		
	GOOD	FAIR	POOR
I.Q.	112		116
Age, years	27	26	24
College education	60%		82%
Average intelligence	39%		20%
Superior intelligence	50%		80%
Married, males	58%		35%
No personality difficulties (not defined)	81%		70%
Extrovert (not defined)	43%		30%
Some related experience	29%	26%	7%

5. RELIABILITY: not given.

139

Moss, F. A., Wyle, H., Loman, W., and Middleton, W.: *Test for Ability to Sell, George Washington University Series, Manual, 1929*. Washington, D.C.: Center for Psychological Services, George Washington University. Also in *Store Management*, April, 1929.

1. SUBJECTS: 100 salespersons, department store.
2. TESTS: Test for Ability to Sell (George Washington University Series).
3. CRITERION: efficiency ratings as determined by: (1) amount of sales, (2) number of errors, (3) amount of merchandise returned, (4) combined estimates of buyer, floor manager, and personnel officer.

4. VALIDITY: correlation of test scores and efficiency ratings: .54.

   Comparison of average test scores of best 25 and poorest 25 salespersons:

Best	112
Poorest	70.5

5. RELIABILITY: not given.

140

RADLER, K.: Eignungsprüfungen von Acetylenschweissern nebst technologischen Erfolgskontrollen. *Industrielle Psychotechnik*, 1929, *6:* 177–194.

1. SUBJECTS: 60 acetylene welders.
2. TESTS: (1) tremometer, (2) general practical intelligence, (3) reaction time, (4) static fatigue (holding weights, etc.), (5) concentration test, (6) two-handed test, (7) visual tests.
3. CRITERION: a total job score composed of: (1) rating by supervisor, (2) rating of work already completed, (3) rating of test job-samples.
4. VALIDITY: correlation between criterion and test scores:

TEST	RHO
4	.46
3 (reciprocal of reaction time)	.38
5 (reciprocal of score)	.2
1	.17
6	.17
2 (reciprocal)	.14
2 (score)	−.04
5 (score)	−.1
3 (score)	−.4

5. RELIABILITY: not given.

141

SCUDDER, K. J.: The predictive value of general intelligence tests in the selection of junior accountants and bookkeepers. *Journal of Applied Psychology*, 1929, 13: 1–8.

1. SUBJECTS: 264 disabled veterans, trained as junior accountants or bookkeepers.
2. TESTS: Terman Group Test of Mental Ability.
3. CRITERION: success or failure in training and on the job.
4. VALIDITY: comparison of test scores of those who succeeded with those who failed:

GROUP	*N*	MEDIAN SCORE	RANGE	SCORING ABOVE 100	SCORING BELOW 100
Failed	94	112	18–194	57	37
Succeeded	170	142	37–216	145	25

5. RELIABILITY: not given.

142

VITELES, M. S.: The human factor in substation operation. *Personnel Journal*, 1929–30, 8: 81–113.

1. SUBJECTS: 84 substation operators.
2. TESTS: (1) MacQuarrie Test for Mechanical Ability: Pursuit Test, modified, (2) MacQuarrie Test for Mechanical Ability: Blocks, modified, (3) Army Beta Examination: Blocks, (4) Location Test, (5) Series Completion, (6) Healy Puzzle Box, modified, (7) Viteles Test, Directions, (8) Viteles Test, (choice-reaction) Learning, (9) Morgan & Hull Persistence Test.
3. CRITERION: (1) classified by 13 superiors into 3 groups: Best, Average, and Poorest; (2) operating errors for 1¾ years of work.
4. VALIDITY: comparison of average total test scores and operating errors for the 3 groups:

GROUP	*N*	PER CENT OF TOTAL ERRORS	AVERAGE ERROR PER MAN	AVERAGE TEST SCORE	STANDARD DEVIATION
Best	17	6.3	0.24	81.4	13.6
Average	54	57.8	0.69	69.2	13.5
Poorest	13	35.9	1.77	53.5	15.6

If a critical score is set at 75, 70.6 per cent of the Best group would be hired, 7.7 per cent of the Poorest group would be hired.

Difference in average total test scores by groups:

	DIFFERENCE	DIFF./S.D. DIFF.
Best and Average	12.2	14.5
Best and Poorest	27.9	19.4
Average and Poorest	15.7	12.9

5. RELIABILITY: comparison of operating errors of the 3 rated groups:

GROUP	*N*	PER CENT INVOLVED IN ERROR	NUMBER OF ERRORS	PER CENT OF TOTAL ERRORS	AVERAGE ERROR PER MAN
Best	17	23.5	4	6.3	0.24
Average	54	51.9	37	57.3	0.69
Poorest	13	76.9	23	35.7	1.77

143a

BECKMAN, R. O., and LEVINE, M.: Selecting executives. *Personnel Journal*, 1929–30, 8: 415–420.

1. SUBJECTS: 29 executives, in Cincinnati city government.
2. TESTS: (1) Allport A-S Reaction Study, (2) Laird Personal Inventory, Short Form.
3. CRITERION: efficiency ratings for one month.
4. VALIDITY: correlation between test scores and criterion:

TEST	CORRELATION
1	.05
2	.25

Using only those executives rated by the same person (*N* not given):

TEST	CORRELATION
1	.41
2	−.01

5. RELIABILITY: correlation of 2 ratings by the city manager: .94.

143b

BECKMAN, R. O., and LEVINE, M.: Selecting executives. *Personnel Journal*, 1929–30, 8: 415–420.

1. SUBJECTS: 31 water meter readers.
2. TESTS: (1) Allport A-S Reaction Study, (2) Laird Personal Inventory, Short Form.
3. CRITERION: efficiency ratings for one month, all by same rater.
4. VALIDITY: correlation between test scores and criterion:

TEST	CORRELATION
1	−.07
2	.21

5. RELIABILITY: not given.

144

CULPIN, M., and SMITH, M.: *The nervous temperament*. Great Britain Medical Research Council, Industrial Health Research Board, Report No. 61, 1930. Pp. 46.

1. SUBJECTS: 3 groups: (a) 60 clerical workers, (b) 69 clerical workers, (c) 32 typists.
2. TESTS: (1) dotting, (2) speed test of typing, (3) number of nervous symptoms.
3. CRITERION: Groups a and b: graded for efficiency by superiors. Group c: average output per hour.
4. VALIDITY:

EFFICIENCY RATING	PER CENT IN EACH GRADE ON DOTTING TEST						PER CENT SHOWING NERVOUS SYMPTOMS		
	N	A	B	C	D	E	0	1	2 or more
Group a:									
A	22	18.2	45.5	13.6	22.7	0	50.0	13.6	36.4
B	21	0	23.8	33.3	38.1	4.8	47.6	23.8	28.6
C	17	5.9	17.6	35.3	35.3	3.9	23.5	23.5	52.9
Group b:									
A	18	16.7	38.9	44.4	0	0	61.1	16.7	22.2
B	19	10.5	42.1	31.6	15.8	0	68.4	10.5	21.1
C	15	6.7	33.3	53.4	6.7	0	29.7	40.0	33.3
D	17	0	29.4	29.4	41.2	0	35.3	29.4	35.3

	N	NUMBER OF SYMPTOMS	MEAN OUTPUT	MEAN, TEST 2
Group c:				
	10	0	891 ± 9.3	1701 ± 34.8
	14	1	912 ± 9.0	1756 ± 21.0
	8	2 or more	939 ± 13.6	1904 ± 35.1

5. RELIABILITY: not given.

145

HALL, O. M.: An aid to the selection of pressman apprentices. *Personnel Journal*, 1930–31, 9: 77–81.

1. SUBJECTS: 89 job and cylinder pressman apprentices.
2. TESTS: Minnesota Paper Formboard.
3. CRITERION: ratings of skill on a 5-point scale by 3 instructors.
4. VALIDITY: correlation between test and criterion: .58 ± .05. Setting critical score at 45 eliminates 69.6 per cent of the inferior group, but retains 93.8 per cent of average and 94.7 per cent of superior group.
5. RELIABILITY: not given.

146a

Munro, M. S., and Raphael, W.: Selection tests for clerical occupations. *Journal of the National Institute of Industrial Psychology*, 1930–31, 5: 127–137.

1. SUBJECTS: 2 groups: (a) 10 shorthand typists, (b) 11 shorthand typists.
2. TESTS: (1) a shorthand test, (2) typing orders from copy, (3) typing difficult matter from copy, (4) test of grammar and spelling.
3. CRITERION: ranking by supervisor.
4. VALIDITY: correlation of test rank with criterion:

   Group a: .87 ± .05
   Group b: .73 ± .09

5. RELIABILITY: not given.

146b

Munro, M. S., and Raphael, W.: Selection tests for clerical occupations. *Journal of the National Institute of Industrial Psychology*, 1930–31, 5: 127–137.

1. SUBJECTS: 2 groups: (a) 19 messengers, (b) 12 messengers.
2. TESTS: (1) an intelligence test, (2) comprehension of written instructions, (3) similarities, (4) code, (5) synonyms, (6) memory for verbal instructions.
3. CRITERION: ranking by supervisor.
4. VALIDITY: correlation of test rank with criterion:

   Group a: .68 ± .08
   Group b: .73 ± .10

5. RELIABILITY: not given.

146c

MUNRO, M. S., and RAPHAEL, W.: Selection tests for clerical occupations. *Journal of the National Institute of Industrial Psychology*, 1930–31, 5: 127–137.

1. SUBJECTS: 14 clerks (order clerks).
2. TESTS: a "cycle omnibus" test consisting of: (1) problems to measure intelligence, (2) posting names, numbers, and money, (3) checking names, numbers, and money, (4) filing numbers.
3. CRITERION: ranking by supervisor.
4. VALIDITY: correlation of test rank and criterion: .90 ± .03.
5. RELIABILITY: not given.

146d

MUNRO, M. S., and RAPHAEL, W.: Selection tests for clerical occupations. *Journal of the National Institute of Industrial Psychology*, 1930–31, 5: 127–137.

1. SUBJECTS: 15 Hollerith punchers.
2. TESTS: (1) immediate memory for numbers, (2) concentration of attention, with and without distraction, (3) intelligence.
3. CRITERION: production records for previous 6 months.
4. VALIDITY: correlation of test rank with criterion: .60 ± .11.
5. RELIABILITY: not given.

147a

O'ROURKE, L. J.: *Office employment tests.* New York: American Management Association, Office Management Series No. 46, 1930, 2–24.

1. SUBJECTS: 50 stenographers and typists.
2. TESTS: a classification test (judgment, spelling, and grammar items).

3. CRITERION: efficiency ratings.
4. VALIDITY: correlation of test scores and criterion: .73.
5. RELIABILITY: not given.

147b

O'ROURKE, L. J.: *Office employment tests.* New York: American Management Association, Office Management Series No. 46, 1930, 2–24.

1. SUBJECTS: 120 mail distributors (sorters), post office.
2. TESTS: (1) Civil Service Sorting Test, (2) Following Instructions Test.
3. CRITERION: efficiency rating.
4. VALIDITY: comparison of per cent above and below average in efficiency for each test score group:

TEST SCORE	PER CENT BELOW AVERAGE	PER CENT ABOVE AVERAGE
A	9	91
B	39	61
C	58	42
D	94	6

5. RELIABILITY: not given.

148

O'ROURKE, L. J.: Report of the Director of Research, U.S. Civil Service Commission, 47th Annual Report, 1930, 36–39.

1. SUBJECTS: 2 groups: (a) 51 stenographers and typists in a large organization, (b) 80 typists and stenographers in a large industry.
2. TESTS: Civil Service Stenographer-Typist Examination (80 judgment, vocabulary, reading comprehension, spelling, and grammar items).
3. CRITERION: efficiency ratings.

4. VALIDITY: correlation of test scores and efficiency ratings:

Group a	.71
Group b	.76

5. RELIABILITY: not given.

149

PIDDINGTON, R.: Psychological tests for clerical workers. *Australasian Journal of Psychology and Philosophy*, 1930, 8: 59–67.

1. SUBJECTS: 21 women clerks, type not specified.
2. TESTS: tests finally included in weighted battery: (1) substitution, (2) spelling correction, (3) number checking, (4) free chain association, (5) listing, (6) concentration, (7) classification.
3. CRITERION: ratings by 2 supervisors on typing efficiency and on general office efficiency; score on a shorthand test.
4. VALIDITY: correlation between criteria and weighted total test score:

Rating of typing efficiency	.65 ± .09
Rating of office efficiency	.59 ± .10
Shorthand score	.56 ± .13

5. RELIABILITY: not given.

150

SLOCOMBE, C. S., and BRAKEMAN, E. E.: Psychological tests and accident proneness. *British Journal of Psychology*, 1930–31, 21: 29–38.

1. SUBJECTS: 86 streetcar motormen: 43 high-accident men, 43 low-accident men.
2. TESTS: 3 groups: (a) speed tests: 1—simple reaction, 2—choice reaction, 3—oscillation: simple and choice reactions, 4—perseveration; (b) accuracy tests: 1—simple reaction, 2—choice reaction, 3—6-light test, 4—oscillation: 6-light test, 5—perseveration; (c) tapping.
3. CRITERION: accident record on the job.

4. VALIDITY: (a) correlation between test score and number of accidents: $r = .20$.

   (b) comparison of test scores of high- and low-accident men:

GRADE ON TEST	HIGH-ACCIDENT MEN	LOW-ACCIDENT MEN
Good	16	20
Mediocre	19	21
Poor	8	2

5. RELIABILITY: not given.

151

TAYLOR, D. H.: The selection of printers' apprentices. *Vocational Guidance Magazine*, 1929–30, 8: 281–288.

1. SUBJECTS: apprentices in the printing industry: (a) 400 hand compositors, (b) 70 linotype operators, (c) 50 stone hands, (d) 110 job and cylinder pressmen, (e) 145 newspaper pressmen.
2. TESTS: (1) Woodworth-Wells A Cancellation, modified, (2) Woodworth-Wells Form Substitution, (3) Woodworth-Wells Number Cancellation, modified, (4) a line-drawing test (judgment of linear distance), (5) Minnesota Paper Formboard, Forms A and B, (6) Otis Self-administering Test of Mental Ability, Higher Examination, Form A, (7) MacQuarrie Test for Mechanical Ability, (8) personal data.
3. CRITERION: rating by instructors in apprentice schools.
4. VALIDITY: correlation of test scores and criterion:

GROUP	TEST	CORRELATION
b	6	.41

   Group d and/or e (not clear which), Test 5, critical score of 44 on combined Forms A and B eliminates 71 per cent of those ranked below average but only 6 per cent of those rated average or above. Results for hand compositors showed no high correlations.

5. RELIABILITY: not given.

152

WAGENHORST, L. H.: The relation between ratings of student teachers in college and success in the first year of teaching. *Educational Administration and Supervision*, 1930, 16: 249–253.

1. SUBJECTS: 191 teachers.
2. TESTS: (a) Otis Self-administering Test of Mental Ability, (b) practice-teaching rating, (c) scholarship (quality points).
3. CRITERION: rating by superintendent for first year's teaching.
4. VALIDITY: correlation between ratings and test scores:

a.	.001 ± .05
b.	.23 ± .05
c.	.01 ± .06

5. RELIABILITY: not given.

153

WALTHER, L.: Quelques chapitres de la technopsychologie du travail industriel. *L'Année psychologique*, 1930, 31: 150–191.

1. SUBJECTS: (a) 12 paper bag makers, (b) 230, presumably also paper bag makers (identified only as "another factory").
2. TESTS: (1) dotting, (2) tapping, (3) stringing beads, (4) cutting, (5) discs (a type of pegboard by Walther).
3. CRITERION: Group a: 6 weeks' output, 6 workers who tested high versus 6 workers who tested low. Group b: classification by superiors.
4. VALIDITY: Group a: 6 good workers surpassed 6 poor workers by 2,050 pieces per day.

   Group b: correlation between test scores and work classification for 11 supervisors: 1.00, .93, .91, .90, .89, .80, .80, .70, .46, .40, .10. (*N* for each correlation not given.)
5. RELIABILITY: not given.

154

Anderson, H. J.: Correlation between academic achievement and teaching success. *Elementary School Journal*, 1931–32, 32: 22–29.

1. subjects: 590 teachers' college graduates teaching in elementary (84 per cent) and secondary (16 per cent) schools.
2. tests: (1) high school scholarship, (2) college scholarship.
3. criterion: ratings by school superintendents.
4. validity: correlations between superintendents' ratings and high school and college scholarship:

High school scholarship..........	r = .12 ± .03
College scholarship	r = .19 ± .03

5. reliability: not given.

155

Bird, N.: Relationships between experience factors, test scores, and efficiency. *Archives of Psychology*, No. 126, 1931. Pp. 51.

1. subjects: 4 groups: (a) 80 file clerks, (b) 100 typists, (c) 80 ledger clerks, (d) 100 stenographers.
2. tests: (1) Otis Self-Administering Test of Mental Ability, (2) address checking, (3) Benge Clerical Test "K," (4) Thurstone Typing Test, (5) Benge Stenogauge.
3. criterion: an efficiency index composed of the following: salary, number of months employed, salary increase, number of promotions, and ratings by superiors.
4. validity: correlations between efficiency index and test scores, age, education, and experience.

GROUP	TESTS							
	1	2	3	4	5	AGE	EDUCATION	EXPERIENCE
a	−.18	−.03				.24	−.25	.01
b	−.08			−.07		.07	−.16	−.18
c	.07	.01	.14			.29	−.30	.18
d	.06				.53	.41	−.16	.11

For Group d: multiple correlation coefficient, Test 5 and age: .67.

5. RELIABILITY: reliability of ratings: first and third ratings correlated: .68 ± .06.

156

BOSSING, N. L.: *Teacher-aptitude tests and teacher selection.* U.S. Department of the Interior, Office of Education, Research in Higher Education, Bulletin 12, 1931, 117–133.

1. SUBJECTS: 165 high school teachers.
2. TESTS: (1) cadet teaching grades, (2) professional education grades, (3) all academic grades exclusive of those in professional subjects.
3. CRITERION: rating by supervisors after 1 and 2 years of teaching.
4. VALIDITY: correlation of criterion and grades:

TEST	CORRELATION
1	.69 ± .07
2	.19 ± .06
3	.17 ± .09

5. RELIABILITY: reliability (ratings received first year correlated with ratings second year) for "general rank": .83 ± .02. Total of ratings on other 9 items (supposedly an analysis of "general rank"): .05 ± .13.

157

CASTLEMAN, N., GROVER, M., and MOORE, H.: An aptitude test for high school teachers. *Journal of Applied Psychology*, 1931, 15: 208–213.

1. SUBJECTS: 104 high school teachers.
2. TESTS: an aptitude test for teachers based on traits judged necessary for success.
3. CRITERION: four high school principals designated their 5 best teachers.
4. VALIDITY: the best teachers compared with the other teachers:

GROUP	*N*	RANGE	MEDIAN
Best teachers	20	75–129	98
Average teachers	84	56–124	86

5. RELIABILITY: not given.

158

DECKER, C. E.: *An experiment in the use of psychological tests in the selection of life insurance agents.* Unpublished Master's thesis, Dartmouth College, 1931.

1. SUBJECTS: 70 life insurance salesmen.
2. TESTS: (1) Allport's A-S Reaction Study, (2) Strong Vocational Interest Blank, (3) Allport-Vernon Study of Values, (4) Otis Self-administering Test of Mental Ability, Higher Examination, Form A.
3. CRITERION: paid premiums.
4. VALIDITY: comparison of successful (53 per cent above $3,000), doubtful (17 per cent $2,000–$3,000), and poor (30 per cent below $2,000) groups in terms of per cent scoring in "successful area" on test for various test combinations:

TEST	GROUP		
	SUCCESSFUL	DOUBTFUL	POOR
2	82%	14%	4%
2 and 3—economic	85	15	0
2 and 3—theoretical	83	8.5	8.5
2 and 3—political	94	6.0	0

(Other combinations of scales on Test 3 given. Tests 1 and 4 did not differentiate.)

5. RELIABILITY: not given.

159

KRINER, H. L.: *Pre-training factors predictive of teacher success.* Pennsylvania State College Studies in Education No. 1, 1931. Pp. 91.

1. SUBJECTS: 262 teachers, the best and poorest of a population of 2,125 teachers in the city schools in one state; elementary, junior high, and high school levels.
2. TESTS: (1) personal data from interview, (2) secondary school record.

3. CRITERION: 131 best, 131 poorest teachers in 20 schools chosen by their superintendents by man-to-man rating. Not more than 10 per cent of either type from one school.
4. VALIDITY: tetrachoric correlation between teacher-success and personal history data (only a partial list of those given are included here):

FACTORS	ELEMENTARY TEACHER	HIGH SCHOOL TEACHER
Latin in secondary school	.35	.22
French in secondary school	−.15	−.13
Mathematics in secondary school	.17	.14
Cicero in secondary school	.50	.42
Mathematics beyond 2 units	.45	.42
Grades in secondary school	.42	.27
Rank top half in secondary school	.88	.47
Secondary school: interest in teaching	.64	.52
Secondary school: plan teaching as career	.70	.61
Fathers businessmen	.56	.08

5. RELIABILITY: not given.

160

LAHY, J. M., and KORNGOLD, S.: Sélection des opératrices de machines comptables. *L'Année psychologique*, 1931, 32: 131–149.

1. SUBJECTS: 10 bookkeeping machine operators, women.
2. TESTS: (1) logical intelligence, (2) directions, (3) monotony, (4) 4 tests of attention, (5) 4 tests of memory, (6) reaction time, (7) muscular strength, endurance, and ambidexterity.
3. CRITERION: rating by superior into 3 groups: good, average, and poor.
4. VALIDITY: comparison of standing in tests and rating showed perfect correspondence if groups considered.
5. RELIABILITY: not given.

161

NIER, M.: Der Mensch als Wirtschaftsfaktor in Verkehrsbetriebe: seine Eignung und Anlernung, Part II. *Industrielle Psychotechnik*, 1931, 8: 74–96.

1. SUBJECTS: 51 streetcar motormen.
2. TESTS: a traffic film taken from one of the company's cars. S manipulates a lever which marks his route on a moving strip of paper, and a hand brake. Start and stop signals are used. Performance is scored in relation to an ideal route.
3. CRITERION: questionnaire filled out by supervisors, who underlined appropriate descriptions of S's performance on the job.
4. VALIDITY: rank order correlation between job performance and performance on the test: .82 ± .03.
5. RELIABILITY: not given.

162

SEASHORE, S.: The aptitude hypothesis in motor skills. *Journal of Experimental Psychology*, 1931, 14: 555–561.

1. SUBJECTS: 50 winders, male, in a knitting mill.
2. TESTS: Stanford Motor Skills Unit, consisting of: (1) Koerth Pursuit Rotor, (2) Motor Rhythm Synchrometer, (3) Tapping Speed, (4) Serial Discrimeter, (5) Miles Speed Rotor, (6) Brown Spool Packer.
3. CRITERION: average hourly production during the final two-week period of the first 3 months of employment, in Bedaux units.
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	−.07
2	.00
3	.22
4	.12
5	.36
6	.30
Total battery........	.14 ± .10

5. RELIABILITY: correlation between production for the final two weeks of the period and the two weeks preceding: .82 ± .03.

163

Ullmann, R. R.: *The prognostic value of certain factors related to teaching success.* Ashland, Ohio: A. L. Garber Co., 1931. Pp. xiv + 133.

1. SUBJECTS: 116 first-year teachers in secondary schools.
2. TESTS: (1) Social Intelligence, (2) Brown Psychological Examination (general intelligence), (3) Odell Test of Knowledge of Principles of Teaching, (4) Weber's Test of Knowledge of Functions, Purposes, and Objectives of Secondary Education, (5) Sims Score Card for Socio-Economic Status, (6) Freyd's Graphic Rating Scale for Teachers (self-rating), (7) Cowdery and Strong Interest Report Blank, (8) college marks in nonprofessional subjects, (9) grades in education courses, (10) grades in major subject, (11) practice teaching score.
3. CRITERION: rating by superintendent, principal, or supervisor on a teacher rating blank.
4. VALIDITY: correlation of test scores and criterion:

TEST										
1	2	3	4	5	6	7	8	9	10	11
.18	.15	.14	.90	.19	.09	.02	.30	.30	.20	.36

5. RELIABILITY: not given.

164

Acheson, E. M.: *The effective dean of women.* Chicago: University of Chicago Press, 1932. Pp. xii + 211.

1. SUBJECTS: 50 deans of women: 44 successful, 6 unsuccessful.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, Form C, (2) Colgate Test of Emotional Outlets, B2, (3) Watson Test of Public Opinion, (4) George Washington Social Intelligence Test, (5) Chassell's Experience Variables Record, (6) Vocational History.
3. CRITERION: ratio of favorable and unfavorable student evaluation. (Other criteria used by results not presented in usable form.)

4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	−.12 ± .10
5	.11 ± .10
6	.02 ± .10
4	−.15 ± .10
3	−.13 ± .10
2	−.15 ± .09

5. RELIABILITY: not given.

165

BROOM, M. E.: A note on predicting teaching success. *Educational Administration and Supervision*, 1932, 18: 64–67.

1. SUBJECTS: 243 teachers (not all for all measures, lowest *N* is 134).
2. TESTS: (1) rating of practice teaching, (2) grade point ratio per unit of practice teaching done, (3) grade point ratio per unit in all education courses except practice teaching, (4) grade point ratio per unit for all college courses, (5) number of units completed in education courses except practice teaching, (6) total equivalent score yielded by Thorndike Intelligence Examination for High School Graduates, Series of 1925–1929.
3. CRITERION: estimates of teaching success by superintendents, principals, supervisors, or members of boards of education. One to 3 estimates.
4. VALIDITY: correlation of "test scores" and criterion:

TEST	CORRELATION
1	.29 ± .04
2	.26 ± .04
3	.19 ± .04
4	.19 ± .04
5	.01 ± .04
6	.17 ± .06

5. RELIABILITY: not given.

166

BROOM, M. E., and AULT, J. W.: How may we measure teaching success? *Educational Administration and Supervision*, 1932, 18: 250–256.

1. SUBJECTS: 93 first-year teachers.
2. TESTS: (1) grade point ratio: in all college work for Criterion 1, in Educational Theory for Criterion 2, (2) ratings on scholarship in practice teaching, (3) ratings on classroom method in practice teaching, (4) ratings on classroom discipline in practice teaching, (5) Thorndike Intelligence Examination for High School Graduates, Series of 1925–1929.
3. CRITERION: ratings by supervisors after 1st year of teaching, as reported to State Department of Education on: (1) scholarship, (2) classroom method, (3) classroom discipline.
4. VALIDITY: correlation of "test scores" and criteria:

TEST	*N*	CORRELATION		
		CRITERION 1	CRITERION 2	CRITERION 3
1	81	.13 ± .07	.24 ± .07	
2	59	.02 ± .09		
3			.18 ± .08	
4				.30 ± .08
5	76	.16 ± .08	−.12 ± .08	−.08 ± .08

5. RELIABILITY: not given.

167a

HAYES, E. G.: Selecting women for shop work. *Personnel Journal*, 1932–33, 11: 69–85.

1. SUBJECTS: 208 coil winders, female, Western Electric Company.
2. TESTS: (a) O'Connor Finger Dexterity Test, (b) Hayes Pegboard (Western Electric Pegboard).
3. CRITERION: output during first 8 weeks on the job.
4. VALIDITY: correlation between composite weighted score (2 tests plus experience) and criterion: .40 ± .05.

5. RELIABILITY: correlation of output for first 4 weeks correlated with output for second 4 weeks: .78.

167b

HAYES, E. G.: Selecting women for shop work. *Personnel Journal*, 1932–33, 11: 69–85.

1. SUBJECTS: 254 punch press operators, female, Western Electric Company.
2. TESTS: (a) O'Connor Finger Dexterity Test, (b) Hayes Pegboard (Western Electric Pegboard).
3. CRITERION: output during first 8 weeks on the job.
4. VALIDITY: correlation between composite score (2 tests plus experience) and criterion: .35 ± .04.
5. RELIABILITY: correlation between first 4 weeks' output with second 4 weeks' output: .81.

167c

HAYES, E. G.: Selecting women for shop work. *Personnel Journal*, 1932–33, 11: 69–85.

1. SUBJECTS: 214 insulating machine operators, female, Western Electric Company.
2. TESTS: (a) O'Connor Finger Dexterity Test, (b) Hayes Pegboard (Western Electric Pegboard).
3. CRITERION: output during first 8 weeks on the job.
4. VALIDITY: correlation between composite weighted score (2 tests plus experience) and criterion: .31 ± .06.
5. RELIABILITY: correlation with output for first 4 weeks with output for second 4 weeks: .87.

167d

HAYES, E. G.: Selecting women for shop work. *Personnel Journal*, 1932–33, 11: 69–85.

1. SUBJECTS: 2 groups: (a) 304 bench hands, female, Western Electric Company, (b) 52 bench hands, female, Western Electric Company, part of first group.
2. TESTS: (a) O'Connor Finger Dexterity Test, (b) Hayes Pegboard (Western Electric Pegboard).
3. CRITERION: Group a: supervisor's estimate of speed of learning based on percentage of "bogey" attained during first month. Group b: output of part of first group 6 months later.
4. VALIDITY: correlation of composite weighted score (2 tests plus experience) and criterion: Group a: .36 ± .03; Group b: .30 ± .08.
5. RELIABILITY: Group a: correlation of average bogey percentages for first 2 weeks on the job and second 2 weeks on the job: .81 ± .02 (corrected: .89).

168

LANGDON, J. N.: *An experimental study of certain forms of manual dexterity.* Great Britain Medical Research Council, Industrial Health Research Board, Report No. 66, 1932. Pp. 56.

1. SUBJECTS: 6 groups: (a) 22 needle packers, (b) 12 makers of flies for angling, (c) 21 toffee wrappers, (d) 12 soap wrappers, (e) 16 shaving stick wrappers, (f) 16 wrappers of tins.
2. TESTS: (1) placing rings on rods, (2) match insertion, (3) threading beads, hands hidden, (4) knotting string.
3. CRITERION: score on work sample.
4. VALIDITY: score on work sample correlated with total weighted standard score on tests:

   Group a: .51 ± .11
   Group b: .4
   Group c: .39 ± .13; with experience held constant: .48 ± .11
   Group d: .4; with age and experience held constant: .3
   Group e: .1; with age and experience held constant: .3
   Group f: −.1; with age and experience held constant: .2

5. RELIABILITY: test reliabilities (correlation between first and total trials, etc.) from .50 to .85 for various groups.

   Correlation between work sample scores and piece-rate wages: for Group a: .30 ± .14.

169

McMURRY, R. N.: Efficiency, work-satisfaction, and neurotic tendency. *Personnel Journal*, 1932–33, 11: 201–210.

1. SUBJECTS: bank employees of many kinds (clerks, stenographers, messengers, tellers, supervisors, etc.): 93 females, 40 page girls, 63 males.
2. TESTS: (1) Bernreuter Personality Inventory, (2) Otis Self-administering Test of Mental Ability, Form B.
3. CRITERION: ratings by superiors transformed into an index of efficiency.
4. VALIDITY: correlation between test scores and criterion:

	TEST 1	TEST 2
Women	−.13	.43
Page girls	−.05	.55
Men	−.27	.34

5. RELIABILITY: correlation between ratings (by 17 judges) and ratings of the personnel officer on 93 women, range: .36 to 1.00; page girls: correlation of 2 raters = .67.

170

MUNRO, M. S., and RAPHAEL, W. S.: A short test for the selection of workers. *Human Factor*, 1932, 6: 244–246.

1. SUBJECTS: 120 sales girls, retail, chain store.
2. TESTS: a 10-minute test covering: (1) intelligence, (2) arithmetical accuracy, (3) attention to instructions, (4) tact.
3. CRITERION: rating by supervisors as Good or Fairly Good, 60 in each group. (Poor employees had been discharged earlier.)
4. VALIDITY: comparison of average scores for the 2 groups:

GROUP	AVERAGE SCORE	DIFFERENCE
Good	8.07	3.02 ± .50
Fairly Good	5.05	

Of the 60 best on the test, 40 were rated Good.

5. RELIABILITY: not given.

171

SHARTLE, C. L.: A selection test for electrical troublemen. *Personnel Journal*, 1932–33, 11: 177–183.

1. SUBJECTS: 27 electrical troublemen.
2. TESTS: (1) MacQuarrie Test for Mechanical Ability: Pursuit, (2) MacQuarrie Test for Mechanical Ability: Blocks, (3) an arithmetic test, (4) an electrical circuit test, (5) an electrical information test, I, (6) an electrical information test, II.
3. CRITERION: ranking by 2 superiors.
4. VALIDITY: correlation between total test scores and criterion:

Judgments of Rater A....................	.64 ± .08
Judgments of Rater B....................	.72 ± .06
Combined judgments of both raters........	.67 ± .08

At a critical score of 76, 100 per cent of the best group passed, 84.5 per cent of the middle group passed, none of Rater B's poorest group passed, 25 per cent of Rater A's poorest group passed.

5. RELIABILITY: rating of A correlated with rating of B: .87 ± .03.

Reliability of test battery, test-retest (after 1½ years), $N = 20$: .91 ± .03.

172

WYATT, S., and LANGDON, J. N.: *Inspection process in industry*. Great Britain Medical Research Council, Industrial Health Research Board, Report No. 63, 1932. Pp. 53.

1. SUBJECTS: 8 groups: (a) 10 cartridge examiners, (b) 12 metal case examiners, (c) 13 metal cup examiners, (d) 11 steel ball examiners,

(e) sizing tiles, (f) selecting tiles ($N = 18$ for Groups e and f together), (g) 36 sorters of photographic paper, (h) 16 examiners of photographic prints.

2. TESTS: (1) marking C's, (2) marking O's, (3) marking N's, (4) marking E.R., (5) disc sorting, (6) length of line, (7) diffuse attention, (8) peg insertion, (9) peg removal, (10) National Institute of Industrial Psychology Series 33 Intelligence Test.
3. CRITERION: output.
4. VALIDITY: output correlated with test scores:

GROUP	TEST									
	4	2	1	3	5	6 (Speed)	6 (Accuracy)	8	9	10
a	.7					.7	.4	.8	.7	.7
b	.4					.4	.3	.5	.7	.4
c	.1					−.1	.1	.3	−.1	−.1
d	.3					−.7	.5	.1	−.6	.3
e	.5	.2	.6	.7	.1	.3	.0	.1	.1	.3
f	.5	.4	.7	.5	.1	.3	.2	.5	.3	.3
g	.1	.2	.1	.2	.2	.1	.1	.4	.3	.3
h	.6			.4	−.1	.2	.2	−.1	.2	.1

5. RELIABILITY: for 30 paper sorters, correlation of efficiency in 1st and 5th week of employment: .78.

173

DIEHL, H. S., and PATERSON, D. G.: A personnel study of Duluth policemen. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1933, 2 (2). Pp. 24.

1. SUBJECTS: 124 policemen (entire Duluth force).
2. TESTS: (1) Pressey Senior Classification Test, (2) Pressey Senior Verification Test, (3) Minnesota Vocational Test for Clerical Workers: Number Series, (4) Minnesota Vocational Test for Clerical Workers: Name Series, (5) O'Connor Finger Dexterity Test, (6) O'Connor Tweezer Dexterity Test, (7) Minnesota Mechanical Assembly Test, (8) Minnesota

Spatial Relations Test, (9) Bernreuter Personality Inventory, (10) personal history, (11) physical examination.

3. CRITERION: rating by captain as Superior, A ($N = 44$); Average, B ($N = 44$); or Poor, C ($N = 36$).
4. VALIDITY: comparison of the test performances of the 3 groups by means of difference ratios:

GROUPS	TEST											
									9			
	1	2	3	4	5	6	7	8	Emot. Stab.	Self-suff.	Extro.	Dom.
C and B	0.32	1.49	0.66	1.12	2.07	3.38	1.57	2.83	1.43	0.24	1.06	1.35
C and A	3.50	5.17	2.17	4.08	1.76	4.05	2.01	2.52	1.64	1.91	0.89	2.20
B and A	3.66	3.89	1.42	3.24	0.07	0.53	0.52	0.25	0.27	1.95	0.14	0.94

Contingency coefficient between ratings and physical defects: 0.66. Some personal history items have possible significance.

5. RELIABILITY: not given.

174

KINNEY, L. B.: The relationship of certain factors to success in clerical positions. *Journal of Applied Psychology*, 1933, 17: 55–62.

1. SUBJECTS: 2 groups: (a) 54 clerical workers in a mail order house, (b) 77 clerical workers in a wholesale office.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) Kinney Tests in Commercial Arithmetic, Scale A.
3. CRITERION: ratings by office managers.
4. VALIDITY: correlation between ratings and test scores:

TEST	r, GROUP a	r, GROUP b
1	.16 ± .09	.31 ± .07
2—addition	.65 ± .06	.22 ± .08
—subtraction	.38 ± .08	.25 ± .07
—multiplication	.39 ± .08	.38 ± .07
—division	.36 ± .08	.23 ± .08

5. RELIABILITY: not given.

175

MOORE, H.: The Institute's Clerical Test in America. *Human Factor*, 1933, 7: 407–409.

1. SUBJECTS: 2 groups: (a) 18 clerks, (b) 26 clerks.
2. TESTS: Clerical Tests of the National Institute of Industrial Psychology, modified.
3. CRITERION: ranking by superiors.
4. VALIDITY: correlation of test scores and criterion:

Group a..........	.87
Group b..........	.94

5. RELIABILITY: not given.

176

PALMER, I.: Personal qualities of women teachers of physical education. *Research Quarterly of the American Physical Education Association*, 1933, 4: (4), 31–48.

1. SUBJECTS: 100 physical education teachers, college, secondary, and elementary; female.
2. TESTS: (1) "A" Interest Blank (by author), (2) Morris Trait Index L, (3) Bernreuter Personality Inventory, (4) Personal Data Blank (by author).
3. CRITERION: rating by at least 3 superiors. (Used only cases where ratings showed reasonable agreement.) Scale not given—possibly a 6-point scale. Used to divide group into 2: successful and less successful. 50 matched pairs from same training institution and graduation date drawn from original group of 274.
4. VALIDITY: data for Test 3 only: comparison of mean scores of the 2 groups on 4 scales (no others differentiated):

SCALE	SUCCESSFUL GROUP	LESS SUCCESSFUL GROUP	RELIABILITY OF DIFFERENCE
B1-N	−101.6	−14.0	6.82σ
B2-S	22.8	− 6.0	Not given
B3-I	3 made scores above 0	17 made scores below 0	Not given
B4-D	74.4	−14.6	Not given

5. RELIABILITY: not given.

177a

POND, M., and BILLS, M. A.: Intelligence and clerical jobs. Two studies of relation of test score to job held. *Personnel Journal*, 1933–34, 12: 41–56.

1. SUBJECTS: 780 clerical employees.
2. TESTS: Bureau Test VI.
3. CRITERION: job level.
4. VALIDITY: comparison of test score and job level:

JOB LEVEL	TEST SCORE						
	0–40	41–60	61–80	81–100	101–120	121–140	140 and up
G and H (highest)	0%	0%	0%	0.5%	3%	10%	9%
E and F	9	7	5	12	20	26	35
C and D	9	16	24	27	34	32	30
A and B (lowest)	82	77	71	61	43	32	26
Total N	47	112	176	189	168	65	23

5. RELIABILITY: not given.

177b

POND, M., and BILLS, M. A.: Intelligence and clerical jobs. Two studies of relation of test score to job held. *Personnel Journal*, 1933–34, 12: 41–56.

1. SUBJECTS: 123 stenographic employees.
2. TESTS: Bureau Test VI.

3. CRITERION: job level.

4. VALIDITY: comparison of test score and job level:

JOB LEVEL	TEST SCORE				
	0–60	61–80	81–100	101–120	120 up
S 4 (high)	0%	13%	13%	25%	50%
S 3	23	22	32	25	38
S 2	31	22	30	29	0
S 1 (low)	46	43	25	21	12
Total *N*	13	37	40	24	9

5. RELIABILITY: not given.

177C

POND, M., and BILLS, M. A.: Intelligence and clerical jobs. Two studies of relation of test score to job held. *Personnel Journal*, 1933–34, 12: 41–56.

1. SUBJECTS: 2 groups at Scovill Manufacturing Company: (a) 286 male, 244 female clerical workers, (b) 44 order clerks.
2. TESTS: Scovill Classification Test.
3. CRITERION: a combination of job level and rating of the worker in his job.
4. VALIDITY: correlation of test scores and criterion:

Group a: males: .58 ± .03
females: .39 ± .04
Group b: .41 ± .08

5. RELIABILITY: not given.

178

TARGONSKI, H.: Résultats des examens psychotechniques des sous-chefs de gares. *Psychotechnika*, 1933, 7: 263–276. (Original, in Polish, not seen; abstract from *L'Année psychologique*, 1933, 34: 1013–1014.)

1. SUBJECTS: 1,000 assistant station-masters; 423 used in correlations.
2. TESTS: 3 tests of memory: (a) associative memory for names of towns, (b) associative memory for numbers, (c) memory for persons; 4 tests

of attention: (a) Bourdon's test, (b) Couvé's Test of Concentration, (c) Poppelreuter's Test of Diffuse Attention, (d) Test of Simultaneous Action; 2 tests of general intelligence: (a) Gaps in a Text, (b) Baley's Test of Logical Thought; 3 trade tests: (a) Ticket Classification, (b) a rail test, (c) sorting metal tags; some character tests, not specified in abstract. Some individual tests which showed high correlation with criterion are cited specifically: (1) Gaps in a Text, (2) Couvé's Test of Concentration, (3) Poppelreuter's Test of Diffuse Attention, (4) Test of Simultaneous Action, (5) memory for numbers, (6) Ticket Classification, (7) sorting metal tags.

3. CRITERION: rating by superiors, 3-point scale.

4. VALIDITY: correlation of test scores and criterion (age and education held constant), Yule's formula: .40. Agreement between test scores (total) and ratings of success:

GROUP	PER CENT AGREEMENT
Good	68.2
Average	66.0
Poor	38.4

Correlation between test scores and criterion (only those showing high correlations given in *L'Année*, whether given in original not known):

TEST	CORRELATION
1	.65
2	.61
3	.65
4	.73
5	.70
6	.72
7	.66
Bourdon's test	.44
Memory for words	.51
Rail I	.24
Rail II	.33
Rail III	.10

5. RELIABILITY: reliability of test battery (test-retest, $N = 50$): .83 ± .03. Coefficient of equivalence between the ratings of 2 different categories of superiors: .18 ± .10 ($N = 46$).

179

UHRBROCK, R. S., and RICHARDSON, M. W.: Item analysis: the basis for constructing a test for forecasting supervisory ability. *Personnel Journal*, 1933–34, 12: 141–154.

1. SUBJECTS: 163 supervisors.
2. TEST: (1) Bureau Test VI, (2) Strong Vocational Interest Blank, (3) McCall's Multi-mental Test, Form A, (4) Minnesota Paper Formboard, Form A, (5) Minnesota Paper Formboard, Form B, (6) Thurstone Personality Schedule, selected items, (7) Multiple-choice Company Information Test, (8) True-False Company Information Test, (9) Completion Company Information Test.
3. CRITERION: a combination of 12 judgments, made by 4 raters by 3 methods.
4. VALIDITY: correlation of total test score (less Test 2) and criterion: .49 ± .04; if all items not differentiating between the low group and the upper 2 groups (medium and high groups) are eliminated (leaving 85 significant items, which are not enumerated), the correlation becomes: .71 ± .03.
5. RELIABILITY: correlation of the ratings of 2 judges with those of the other 2: .80 ± .02.

180

ACHILLES, P. S., and SCHULTZ, R. S.: Characteristics of life insurance salesmen. *Personnel Journal*, 1933–34, 12: 260–263.

1. SUBJECTS: 100 life insurance salesmen; 50 highest and 50 lowest of 557 new agents, based on their first 13 weeks' production.
2. TESTS: (1) The A-S Reaction Study, Beckman Revision, (2) Root Introversion-Extroversion Test, (3) Bureau Test VI.
3. CRITERION: first 13 weeks' production; 50 highest and 50 lowest of 557 new agents.
4. VALIDITY: comparison of average test scores for the 2 groups:

GROUP	TEST 1	TEST 2	TEST 3
High production	5.75	4.25	66.43
Low production	2.40	2.88	65.73

5. RELIABILITY: not given.

181

ANDREW, D. M., and PATERSON, D. G.: Measured characteristics of clerical workers. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1934, 3 (1): 1–60.

1. SUBJECTS: 138 clerical workers from 4 companies (general clerical work and filing).
2. TESTS: Minnesota Vocational Test for Clerical Workers.
3. CRITERION: (1) supervisor's ratings, (2) ratings of personal history, (3) combined ratings.
4. VALIDITY: contingency coefficient of ratings and test score:

CRITERION	CONTINGENCY COEFFICIENT	*N*
2—general clerical	.63 ± .07	138
2—filing	.66 ± .06	138
1—clerical, Company A	.28 ± .13	97
1—clerical, Company B	.37 ± .25	22
1—filing, Company A	.37 ± .20	34
1—filing, Company B	.42 ± .24	22
3—clerical, Company A	.54 ± .10	97
3—clerical, Companies B, C, D	.61 ± .13	41
3—general clerical, file clerks	.63 ± .10	62
3—filing, Company A	.56 ± .16	34
3—filing, Companies B, C, D	.64 ± .15	28
3—filing, file clerks	.60 ± .11	62

5. RELIABILITY: not given. Test reliability, alternate form: .90.

182a

Berman, I. R., Darley, J. G., and Paterson, D. G.: Vocational interest scales. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1934, 3: 215–245.

1. subjects: 177 office clerks, female.
2. tests: Manson's Women's Occupational Interest Blank.
3. criterion: supervisor's ratings: 30 below average, 81 average, 66 above average.
4. validity: mean standard scores on 10 keys for the 3 rated groups:

KEY	GROUP		
	BELOW AVERAGE	AVERAGE	ABOVE AVERAGE
High school teacher	50	53	56
Grade school teacher	50	52	54
Private secretary	49	55	57
Stenographer	50	55	55
Office manager	52	54	54
Office clerk	49	51	48
Bookkeeper	49	50	47
Retail sales	50	46	43
Sales proprietor	49	46	43
Trained nurse	49	47	45

5. reliability: not given.

182b

Berman, I. R., Darley, J. G., and Paterson, D. G.: Vocational interest scales. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1934, 3: 215–245.

1. subjects: 108 retail saleswomen.
2. tests: Manson's Women's Occupational Interest Blank.
3. criterion: supervisor's ratings: 26 below average, 28 above average in Store A; 29 below average, 25 above average in Store B.
4. validity: mean standard scores on 10 keys for the two groups:

KEY	STORE A BELOW AVERAGE	STORE A ABOVE AVERAGE	STORE B BELOW AVERAGE	STORE B ABOVE AVERAGE
High school teacher	48	49	53	54
Grade school teacher	48	49	53	54
Private secretary	49	52	52	53
Stenographer	49	47	49	47
Office manager	51	51	51	50
Office clerk	50	48	47	43
Bookkeeper	52	50	47	45
Retail sales	53	52	48	46
Sales proprietor	52	52	49	48
Trained nurse	53	50	49	47

5. RELIABILITY: not given.

182c

BERMAN, I. R., DARLEY, J. G., and PATERSON, D. G.: Vocational interest scales. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1934, 3: 215–245.

1. SUBJECTS: 67 janitor-engineers.
2. TESTS: Strong Vocational Interest Blank.
3. CRITERION: ratings by 2 superiors as above or below average.
4. VALIDITY: comparison of mean standard scores of the 2 groups on selected keys:

KEY	ABOVE AVERAGE ($N = 44$)	BELOW AVERAGE ($N = 23$)
Chemist	57	51
Physicist	56	52
Mathematician	54	52
Engineer	59	50
Architect	53	51
Physician	57	53
Farmer	55	52

Other keys showed no significant trends.

5. RELIABILITY: not given.

182d

Berman, I. R., Darley, J. G., and Paterson, D. G.: Vocational interest scales. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1934, 3: 215–245.

1. subjects: 123 policemen.
2. tests: Strong Vocational Interest Blank.
3. criterion: rating on efficiency by captain; 3 categories: above average ($N = 43$), average ($N = 44$), and below average ($N = 36$).
4. validity: comparison of mean standard scores of the 3 groups on selected keys:

KEY	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE
Minister	53	53	50
YMCA General Secretary	53	53	50
YMCA Boys' Secretary	53	53	49
YMCA Physical Director	57	57	51
Teacher	54	54	50
City School Superintendent	56	54	52
Personnel Manager	56	56	50
Policeman	61	63	58

5. reliability: not given.

183

Fischer, E.: Berufsanalyse des Apothekers und Aufstellung einer Testreihe zur Prüfung von Apothekerpraktikanten. Kallmunz: Lasslaben, 1934. Pp. 34.

1. subjects: 20 apothecary's assistants (different employers).
2. tests: (1) manual dexterity (pea test), (2) concentrated attention (letter cancellation), (3) nonperseveration test (letter cancellation, letters change every 5 lines), (4) memory for faces, (5) arithmetical ability (40 addition problems), (6) completion of gaps and correction of errors in a printed text.
3. criterion: graded by employers on 4-point scale: A, very good; B, good; C, acceptable, and D, unacceptable.
4. validity:

TOTAL TEST RANK	EMPLOYER'S GRADE
1	A
2	A
3	B
4	B
5	A
6	A
7	B
8	B
9	B
10	B
11	C
12	C
13	C
14	C
15	B
16	C
17	C
18	D
19	D
20	D

5. RELIABILITY: not given.

184

GRAUER, D.: Abilities, attitudes, and success: a study of sewing-machine operators. *Personnel Journal*, 1933–34, 12: 328–333.

1. SUBJECTS: 15 sewing-machine operators, female, employees of Industrial Workshops of Chicago, for handicapped individuals.
2. TESTS: (1) Western Electric Pegboard, (2) O'Connor Finger Dexterity Test, (3) Porteus Maze, (4) Koh's Blocks, (5) Test Attitude Scale, (6) Work Attitude Scale.
3. CRITERION: earnings
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	.64
2	.58
3	.49
4	.53
Average of first 4 tests..........	.67
5	.42
6	.33
Total of scores on attitude scales:	.44

5. RELIABILITY: correlation between earnings and ratings on quality of work: .97 for 10 S's, .70 for the remainder (!).

185

LAHY, J. M.: La Sélection professionnelle des aiguilleurs. *Le Travail Humain*, 1934, 2: 15–38.

1. SUBJECTS: 198 switchmen (railroad).
2. TESTS: (1) intelligence, (2) diffuse attention, (3) memory, (4) speed of decisions and movements, (5) presence of mind, (6) resistance to fatigue.
3. CRITERION: rated Good ($N = 92$) or Poor ($N = 106$) by superiors.
4. VALIDITY: comparison of the test rating (total test results used to rate S's on 5-point scale) for the 2 criterion groups:

TEST RATING	GOOD GROUP	POOR GROUP
Very good	4	0
Good	15	0
Above average	57	7
Below average	11	31
Poor	5	68

Coefficient of association, Q = .97.

5. RELIABILITY: not given.

186

Lovett, R. F., and Richardson, M. W.: Selecting sales personnel. *Personnel Journal*, 1933–34, 12: 248–253.

1. SUBJECTS: about 650 salesmen (but *N* for individual parts of study not clear), Procter and Gamble Company, selling soap products to retailers. (Some tests had been used in their selection.)
2. TESTS: (1) an index of sales ability, (2) a test of sales managerial ability (both constructed by item analysis on the above group).
3. CRITERION: (1) sales efficiency: *a*—Descriptive Rating Scale by 3 superiors, *b*—Paired Rating Scale by 2 or 3 superiors, *c*—Confidential Report on Job Adjustment, *d*—percentage of quota sold, *e*—per cent of dealers sold, *f*—selling cost per box; (2) capacity for promotion: *a*—periodic ratings by superior, *b*—promotions received.
4. VALIDITY: correlation of test scores with criterion (not specified): Test 1: .4, Test 2: .5.

   Relationship of scores on Test 1 to Criterion 1:

SCORE	PER CENT BELOW AVERAGE	PER CENT ABOVE AVERAGE
Above 125	25	75
101–125	38	62
75–100	61	39
Below 75	84	16

   Relationship of scores on Test 2 to Criterion 2:

GROUP	*N*	PER CENT BELOW MEDIAN	PER CENT ABOVE MEDIAN
A	8	12	88
B	23	35	65
C	122	46	54

5. RELIABILITY: not given for criterion. Test-retest reliability for both tests: .74.

187

MOSS, F. A.: Report of the Committee on Aptitude Tests for Medical Students. *Journal of the Association of American Medical Colleges*, 1934, 9: 67–92.

1. SUBJECTS: interns (medical), exact *N* not given, but at least 144 (1,000 in original group, but used only those where there were 3 or more in the same hospital; there were 48 such hospitals).
2. TESTS: Medical Aptitude Test.
3. CRITERION: rating by superintendent in charge of interns on performance as an intern; 5-point scale (1 is highest rating).
4. VALIDITY: comparison of average rating of various test score groups, per cent of various test score groups rated 1, per cent of various test score groups rated 4 or 5:

TEST SCORE	AVERAGE RATING	PER CENT RATED 1	PER CENT RATED 4 OR 5
Over 200	1.8	41	0
150–199	2.2	23	7
100–149	2.4	16	8
Below 100	3.2	10	37

5. RELIABILITY: not given.

188

O'ROURKE, L. J.: Scientific personnel selection. *Occupations*, 1934, 12 (8): 29–39.

1. SUBJECTS: 2 groups: (a) 80 stenographers and typists, (b) 51 stenographers and typists.
2. TESTS: a general intelligence test.
3. CRITERION: efficiency ratings.
4. VALIDITY: correlation between efficiency ratings and test scores:

Group a:.......... .76
Group b:.......... .71

5. RELIABILITY: not given.

189a

Peterson, H. A., Obourn, G., Wallace, H., and Smith, O. W.: Relationship of scholarship during college career to success in teaching as judged by salary. *Educational Administration and Supervision*, 1934, 20: 625–628.

1. subjects: 63 teachers, normal school graduates.
2. tests: average scholarship in college.
3. criterion: ratings by supervisors.
4. validity: correlation of supervisors' ratings and scholarship: .12, P.E. = .08.
5. reliability: not given.

189b

Peterson, H. A., Obourn, G., Wallace, H., and Smith, O. W.: Relationship of scholarship during college career to success in teaching as judged by salary. *Educational Administration and Supervision*, 1934, 20: 625–628.

1. subjects: 152 teachers; (a) 57 men, principals and secondary school teachers, (b) 95 women, elementary and secondary school teachers. (About 50 per cent of 4 graduating classes.)
2. tests: average college scholarship.
3. criterion: maximum salary during 1st 5 years after graduation.
4. validity: correlation of scholarship and criterion (corrected for attenuation):

GROUP	CORRELATION	P.E.
a	.71	.04
b	.64	.06
47 secondary teachers, women	.22	.10
48 elementary teachers, women	.30	.09
104 secondary teachers, men and women	.43	.05

5. reliability: not given.

190

PIERCE, W. O'D.: *The selection of colour workers.* London: Sir Isaac Pitman & Sons, Ltd., 1934. Pp. xi + 134.

1. SUBJECTS: (a) 20 female pirn sorters, artificial silk industry, (b) 7 female silk pickers, artificial silk industry, (c) 12 foremen dyers, cotton hank dying. (Other groups used, but no adequate validation.)
2. TESTS: a color-grading test (Hudson Davies: 3 series of 16 discs each to be ranked in order of saturation).
3. CRITERION: Group a: 2 independent rankings by foreman and forewoman on color-discrimination ability. Group b: ranked by manager. Group c: ranked by manager in order of "patterning ability." Other groups could not be ranked on color-discrimination ability.
4. VALIDITY: correlation (rank order) of test scores and criterion:

GROUP	CORRELATION	P.E.
a	.86	.04
b	.47	.20
c	.06	.20*

* States manager unable to rank on color discrimination alone; foreman has many duties and responsibilities.

5. RELIABILITY: not given for criterion. Reliability of test (test-retest, $N = 53$): $r = .80$.

191

PIERCE, W. O'D.: The selection of colour workers. *Human Factor*, 1934, 8: 286–290.

1. SUBJECTS: experienced industrial color workers, $N =$ approximately 89, but this is best guess, not certain.
2. TESTS: N.I.I.P. Colour-Discrimination Test.
3. CRITERION: ranking by management on industrial color-discrimination efficiency.

4. VALIDITY: rank order correlation of test scores and criterion: .69 ± .08. General industrial efficiency correlated negatively with test score.
5. RELIABILITY: not given. Reliability of test (test-retest): .80 ± .03.

192

REMPEL, H. D., DIEHL, H. S., and PATERSON, D. G.: Physical findings among certain groups of workers. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1934, 3 (7): 281–299.

1. SUBJECTS: 196 women clerical workers (Board of Education).
2. TESTS: (1) physical examination, (2) Pressey Senior Classification Test.
3. CRITERION: rating by superiors on efficiency, 3-point scale.
4. VALIDITY: contingency coefficient between efficiency rating and physical rating: 0.13 ± .05. If the contingency coefficients are calculated separately for groups scoring low, average, and high on Test 2:

SCORE ON TEST 2	CONTINGENCY COEFFICIENT
Above 89	.11 ± .08
72–88	.29 ± .07
Below 72	.25 ± .07

Detailed findings, concerned with specific symptoms, show approximately the same results.

5. RELIABILITY: not given.

193

SHARTLE, C. L.: A clinical approach to foremanship. *Personnel Journal*, 1934–35, 13: 135–139.

1. SUBJECTS: 23 foremen.
2. TESTS: (1) detailed clinical interview, (2) Strong Vocational Interest Blank.

3. CRITERION: successful foremen, defined as those who had survived, compared with 25 workers of equal job skill.

4. VALIDITY: comparison of the 2 groups: selected items yield a combined interview and Strong score whereby there is no overlapping of the 2 groups. A critical score of 20 is set for the scale; there are no foremen below 50 and no workers above −10.

5. RELIABILITY: not given.

194

STEVENS, S. N.; and WONDERLIC, E. F.: The relationship of the number of questions missed on the Otis Mental Tests and the ability to handle office detail. *Journal of Applied Psychology*, 1934, 18: 364–368.

1. SUBJECTS: 160 branch office managers of a personal finance company.

2. TESTS: Otis Self-administering Test of Mental Ability.

3. CRITERION: routine reports of supervisors; comments on method of systematizing the office, handling detail, and generally following routine work.

4. VALIDITY: comparison of test scores of two groups, one criticized, the other never criticized by the supervisor: criticized group ($N = 62$): 19.4 per cent missed less than 16 questions; 80.6 per cent missed more than 15 questions. Never-criticized group ($N = 98$): 74.5 per cent missed less than 16 questions; 25.5 per cent missed more than 15 questions.

5. RELIABILITY: not given.

195

STRONG, E. K., JR.: Interest and sales ability. *Personnel Journal*, 1934–35, 13: 204–216.

1. SUBJECTS: 181 experienced life insurance agents.

2. TESTS: Strong Vocational Interest Blank, life insurance interest rating.

3. CRITERION: annual paid-for production.

4. VALIDITY: comparison of production for various rating groups:

LIFE INSURANCE INTEREST RATINGS	N	PRODUCTION	% WRITING OVER $150,000 PER YEAR
C	16	$ 72,000	6
B−	5	136,000	40
B	17	133,000	21
B+	38	145,000	43
A	105	191,000	67

Correlation between test score and criterion: .37.

5. RELIABILITY: various correlations of one year's production with the succeeding year's production: .78, .77, .84, .74, .81.

196

BARR, A. S., TORGERSON, T. L., JOHNSON, C. E., LYON, V. E., and WALVOORD, A.C.: The validity of certain instruments employed in the measurement of teaching ability. In H. M. Walker, (Ed.): *The measurement of teaching efficiency*. New York: The Macmillan Company, 1935. xxiv + 237, pp. 74–141.

1. SUBJECTS: 66 teachers, grades 2 to 7, in 4 school systems.

2. TESTS: (1) Moss Social Intelligence Test, (2) American Council on Education Psychological Examination, (3) Morris Trait Index L, (4) Bureau of Public Personnel Administration, Aptitude Test for Elementary and High School Teachers, (5) New Stanford Arithmetic Test, Form V, (6) Torgerson Test of Professional Information, (7) Wood Personal Health Standard and Scale, (8) a personality rating scale (rating by 3 to 9 other teachers), (9) Strong Vocational Interest Blank, (10) Torgerson Diagnostic Teacher Rating Scale (self-ratings).

3. CRITERION: pupil gain on Stanford Achievement Test (total raw score).

4. VALIDITY: correlation (product moment) between test scores and criterion:

TEST	CORRELATION	P.E.
1	.19	.08
2	−.01	.08
3	−.07	.08
4	.12	.08
5	.01	.08
6	.21	.08
7	.11	.08
8	.11	.08
9	.04	.08
10	−.08	.08

5. RELIABILITY: correlation between 2 series of mean gains for chance halves of classes on the Stanford Achievement Test: .70; corrected by Spearman-Brown formula: .82.

197a

DVORAK, B. J.: Differential occupational ability patterns. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1935, 3: 309–348.

1. SUBJECTS: 124 policemen.
2. TESTS: (1) Pressey Senior Classification Test, (2) Pressey Senior Verification Test, (3) Minnesota Vocational Test for Clerical Workers, Number Series, (4) Minnesota Vocational Test for Clerical Workers, Name Series, (5) O'Connor Finger Dexterity Test, (6) O'Connor Tweezer Dexterity Test, (7) Minnesota Mechanical Assembly Test, A, B, and C, (8) Minnesota Spatial Relations Test.
3. CRITERION: rating by captain on 11-point scale, combined into 3 groups: A (best), $N = 44$; B (average), $N = 44$; and C (worst), $N = 36$.
4. VALIDITY: comparison of the test scores of the 3 groups by means of difference ratios:

TEST	GROUPS		
	A AND B	A AND C	B AND C
1	3.66	3.50	0.32
2	3.89	5.17	1.49
3	1.42	2.17	0.68
4	3.24	4.08	1.12
5	0.07	1.76	2.07
6	0.53	4.05	3.38
7	0.52	2.01	1.57
8	0.25	2.52	2.83

5. RELIABILITY: not given.

197b

DVORAK, B. J.: Differential occupational ability patterns. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1935, 3: 309–348.

1. SUBJECTS: 69 janitors, city school system (responsible positions, requiring some knowledge of heating systems and other equipment).
2. TESTS: (1) Pressey Senior Classification Test, (2) O'Connor Finger Dexterity Test, (3) O'Connor Tweezer Dexterity Test, (4) Minnesota Mechanical Assembly Test, Box A, (5) Minnesota Spatial Relations Test.
3. CRITERION: rating by supervisors as A, $N = 46$ or B, $N = 23$ ($A =$ outstanding).
4. VALIDITY: comparison of mean scores and difference ratios for each test for the two groups:

TEST	B		A		DIFFERENCE RATIO
	MEAN	SIGMA	MEAN	SIGMA	
1	31.6	10.3	48.7	17.4	5.10
2	290.0	45.4	293.5	50.2	Not given
3	399.6	58.6	382.2	76.6	Not given
4	66.4	14.4	74.1	14.6	2.09
5	1,589.1	294.0	1,360.9	335.5	2.90

5. RELIABILITY: not given.

197c

DVORAK, B. J.: Differential occupational ability patterns. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1935, 3: 309–348.

1. SUBJECTS: 212 office clerks, female, city school system.
2. TESTS: (1) Pressey Senior Classification Test, (2) Minnesota Vocational Test for Clerical Workers, Number Series, (3) Minnesota Vocational Test for Clerical Workers, Name Series, (4) O'Connor Finger Dexterity Test, (5) O'Connor Tweezer Dexterity Test, (6) Minnesota Rate of Manipulation Test, Placing, (7) Minnesota Rate of Manipulation Test, Turning, (8) Minnesota Mechanical Assembly Test, Box A, (9) Minnesota Spatial Relations Test, (10) Pressey Senior Verification Test.
3. CRITERION: rating for efficiency by superiors, 5-point scale: A (best), $N = 14$; B, $N = 65$; C, $N = 93$; D, $N = 32$; E, $N = 8$.
4. VALIDITY: mean scores and standard deviations, according to efficiency groups:

TEST	E		D		C		B		A	
	MEAN	SIGMA	MEAN	SIGMA	MEAN	SIGMA	MEAN	SIGMA	MEAN	SIGMA
1	45	15	64.1	17.8	68.2	14.4	70.6	15.0	75.6	12.8
2	123.8	24.7	136.2	30.2	147.3	25.4	146.1	26.4	138.6	16.3
3	131.2	28.7	146.2	34.3	150.9	23.7	156.1	25.5	155.0	28.8
4	260.0	54.8	243.1	29.0	231.9	28.8	220.8	25.6	225.7	26.4
5	410.0	89.4	338.8	46.8	332.4	42.8	318.0	47.2	321.4	25.8
6	243.8	17.6	234.7	21.0	224.0	17.7	225.8	18.9	225.7	15.8
7	202.5	31.1	191.6	23.5	185.1	21.0	184.7	19.6	182.9	12.6
8	35.6	12.5	41.6	19.0	44.2	17.2	47.7	17.4	47.1	16.2
9	1,587.5	304.0	1,268.8	253.5	1,202.7	257.0	1,208.5	264.0	1,250.0	196.0
10	51.9	21.4	69.1	14.2	71.1	12.2	73.7	11.7	77.9	12.0

5. RELIABILITY: not given.

197d

DVORAK, B. J.: Differential occupational ability patterns. University of Minnesota, *Employment Stabilization Research Institute Bulletin*, 1935, 3: 309–348.

1. SUBJECTS: 271 graduate nurses.
2. TESTS: (1) Pressey Senior Classification Test, (2) Minnesota Vocational

Test for Clerical Workers, Number Series, (3) Minnesota Vocational Test for Clerical Workers, Name Series, (4) O'Connor Finger Dexterity Test, (5) O'Connor Tweezer Dexterity Test, (6) Minnesota Mechanical Assembly Test, Box A.

3. CRITERION: rating by supervisors, 5-point scale: A, exceptional ($N = 48$); B, above average ($N = 103$); C, satisfactory ($N = 88$); D, acceptable but below average; and E, not suited to present work (combined, $N = 32$).
4. VALIDITY: comparison of test scores for the 4 groups:

TEST	E AND D		C		B		A	
	MEDIAN	QUARTILE DEV.	MEDIAN	QUARTILE DEV.	MEDIAN	QUARTILE DEV.	MEDIAN	QUARTILE DEV.
1	58	12	62	14	65	12	80	14
2	108	16	117	15	118	14	125	18
3	111	16	122	18	123	22	135	24
4	250	28	250	21	255	22	250	28
5	355	26	336	32	334	28	329	40
6	48	11	47	14	49	14	47	12

5. RELIABILITY: not given.

198

HEARNSHAW, L. S.: The present position of selection tests. *Human Factor*, 1935, 9: 395–403.

1. SUBJECTS: 74 chemical process workers.
2. TESTS: (1) a test requiring attention to 5 tasks in different parts of the room, (2) bodily dexterity and control, (3) judgment of color, viscosity, and turbidity, (4) memory for instructions, (5) memory for spatial position, (6) alertness of observation.
3. CRITERION: grading by superintendent or foreman.
4. VALIDATION: correlation between criterion and test score: .62 ± .05.
5. RELIABILITY: not given.

199

HUSBAND, R. W.: Personality traits of salesmen. *Journal of Psychology*, 1935, 1: 223–233.

1. SUBJECTS: 25 salespersons in a drugstore chain selling general goods.
2. TESTS: Wisconsin Scale of Personality Traits, scales W, X, Y, Z.
3. CRITERION: rating for efficiency on a numerical scale by owner.
4. VALIDITY: comparison of scores for various proficiency groups:

GROUP	SCALE			
	W	X	Y	Z
Best 5th	305.0	350.5	472.8	382.5
Best 40 per cent	293.0	355.7	480.7	383.4
Lowest 5th	338.8	384.0	463.5	377.3

5. RELIABILITY: not given.

200

LEDENT, R., and WELLENS, L.: La sélection et la surveillance des conducteurs des tramways unifiés de Liège et extensions. *Le Travail Humain*, 1935, 3: 385–406.

1. SUBJECTS: 190 conductors (streetcar).
2. TESTS: (1) resistance to fatigue, (2) reaction time, (3) capacity to estimate speeds and distances, (4) diffuse attention.
3. CRITERION: rating by supervisors as Very good, Good, and Weak.
4. VALIDITY: comparison of number of each group in each of 7 test categories (based on number of good, passing, and poor grades on tests):

TEST CATEGORY	VERY GOOD	GOOD	WEAK
1 (good)	17	23	2
2	11	17	1
3	12	34	3
4	4	7	1
5	5	15	0
6	2	9	25
7 (worst)	0	0	2

5. RELIABILITY: not given.

201

Moss, F. A.: Report of the Committee on Aptitude Tests for Medical Students. *Journal of the Association of American Medical Colleges*, 1935, 10: 23–45.

1. SUBJECTS: interns (medical), exact *N* not given, but at least 1,000 (200 hospitals where there were 5 or more interns).
2. TESTS: Medical Aptitude Test.
3. CRITERION: rating by superintendent on performance as an intern; 5-point scale (1 is highest rating).
4. VALIDITY: comparison of average rating of various test score groups, per cent of various test score groups rated 1, per cent of various test score groups rated 4 or 5:

TEST SCORE	AVERAGE RATING	PER CENT RATED 1	PER CENT RATED 4 OR 5
Above 195 (highest 10th)	1.7	43	5
Above median	2.1	27	7
Below median	2.8	9	20
Below 105 (lowest 10th)	3.6	0	23

5. RELIABILITY: not given.

202

Phillips, W. S.: *An analysis of certain characteristics of active and prospective teachers*. George Peabody College for Teachers, Contributions to Education, No. 161, 1935. Pp. 51.

1. SUBJECTS: 173 teachers, male and female, rural and urban, elementary and junior high school—all enrolled in extension courses in Georgia.
2. TESTS: (1) Ohio State University Psychological Examination, Form 18, (2) median grade in extension courses, (3) Wrenn Study Habits Inventory, (4) Coxe-Orleans Prognosis Test of Teaching Ability, (5) Morris Trait Index L, (6) Vocational Interest Blanks (modified Strong Vocational Interest Blank for men, Manson Occupational Inventory Blank

for women), (7) Sims Scale for Socio-economic Status, (8) Bernreuter Personality Inventory, (9) Bell Adjustment Inventory.

3. CRITERION: Jacobs Rating Scale of Teaching Efficiency, rated by superintendents and principals: (1) ratings of superintendents and principals averaged, (2) ratings of superintendents alone translated into *sigma* score ratings.

4. VALIDITY: correlation of test scores and ratings:

TEST	CRITERION 1		CRITERION 2	
	CORRELATION	P.E.	CORRELATION	P.E.
1	.33	.05	.26	.05
2	.19	.05	.23	.05
3	.08	.05	.08	.05
4	.16	.05	.28	.05
5	.20	.05	.23	.05
6	.16	.05	.10	.05
7	.04	.05	.22	.05
Total adjustment	−.08	.05	−.07	.05
Neurotic tendency	−.09	.05	−.14	.05
Self-sufficiency	.04	.05	.01	.05
Dominance-Ascendance	.07	.05	.21	.05

5. RELIABILITY: not given.

203

SCHULTZ, R. S.: Test-selected salesmen are successful. *Personnel Journal*, 1935–36, 14: 139–142.

1. SUBJECTS: 556 new life insurance salesmen, industrial agents.

2. TESTS: (1) Allport A-S Reaction Study, Beckman Revision, (2) Root Introversion-Extroversion Test, (3) Bureau Test VI, (4) Pressey Senior Classification Test, (5) O'Rourke Survey Test for Vocabulary, (6) Strong Vocational Interest Blank, (7) personal history data, (8) sales objection answer test.

3. CRITERION: "best record in getting new business"; 3 groups: Best, Average, and Poorest.

4. VALIDITY: per cent hired and eliminated in each group, if hired according to scores on Tests 1 through 5:

GROUP	PER CENT HIRED	PER CENT ELIMINATED
Best	68.7	31.3
Average	51.3	48.7
Poorest	30.7	69.3

5. RELIABILITY: not given.

204

TANNER, P. A.: Ist die Widerstandsempfindung für das Flachfeilen berufswichtig? *Industrielle Psychotechnik*, 1935, 12: 374–379.

1. SUBJECTS: 13 apprentices in flat filing in a machine industry.
2. TESTS: difference limen for lifted weights by two different techniques, with new apparatus.
3. CRITERION: ranking of apprentices by supervisor based on their performance in flat-filing tasks in the shop.
4. VALIDITY: rank order correlation between shop rank and test rank: first procedure: .1; improved procedure: .87.
5. RELIABILITY: not given.

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205

ANON.: The recruitment and selection of personnel suitable for high administrative positions. *Human Factor*, 1936, 10: 14–22.

1. SUBJECTS: 2 groups: (a) 12 prospective administrators for a department store; (b) 40 prospective administrators for a bank, tested during training period.
2. TESTS: Group a: (1) a test of general intelligence, (2) general information, (3) standardized rating scale for interview (2 interviewers), (4) restriction to University graduates.

Group b: (1) accuracy in checking, (2) classifying, (3) ability to analyze contents of letters, (4) an intelligence test in banking terms, (5) general knowledge, (6) social and business tact.

3. CRITERION: Group a: subsequent progress of tested group, compared with a previous untested group: discharge or appointment to important managerial positions. Group b: rating by management for efficiency.

4. VALIDITY:

GROUP a	HIRED		REMAINING WITH CO., 1934		DISCHARGED	OUTSTANDING
	PUBLIC SCHOOL	UNIV. GRAD.	P.S.	UNIV. GRAD.		
1925–29, untested	24	8	3	2	19	0
1930–34, tested	0	12	0	9	0	2

Group b: tests would have rejected 80 per cent of those considered unsuitable (*N* not given) according to rating during training period. After 3 years "a large proportion" of those scoring low on the tests (*N* not given) were no longer with the bank.

5. RELIABILITY: not given.

206

BILLS, M. A., and WARD, L. W.: Testing salesmen of casualty insurance. *Personnel Journal*, 1936–37, 15: 55–58.

1. SUBJECTS: 27 casualty insurance salesmen.

2. TESTS: (1) Bernreuter Personality Inventory, (2) Strong Vocational Interest Blank.

3. CRITERION: rating on a 4-point scale: only the 2 extreme groups used.

4. VALIDITY: comparison of shifts in test scores for the 2 groups on 4 scales of the test (2 tests 1 year apart).

TEST 1

SCALE	SUCCESSES			FAILURES		
	First test	Second test	Difference	First test	Second test	Difference
Emotional stability	63.4	71.2	7.8	56.1	54.8	−1.3
Self-sufficiency	41.2	45.9	4.7	57.4	54.3	−3.1
Extroversion-Introversion	64.5	70.5	6.0	55.7	54.9	−0.8
Dominance	66.2	74.9	8.7	52.4	54.7	2.3

TEST 2

	PER CENT INCREASED WHERE INCREASE POSSIBLE	PER CENT DECREASED WHERE DECREASE POSSIBLE
Successes	25	4
Failures	5	24

5. RELIABILITY: not given.

207

CORRIS, R. C.: Testing before training. *Personnel Journal*, 1936–37, 15: 87–90.

1. SUBJECTS: 169 packers (also check) in a department store.
2. TESTS: Hard Directions Test.
3. CRITERION: number of errors in inspecting problem saleschecks in training class.
4. VALIDITY: correlation between test score and number of errors: −.44.
5. RELIABILITY: not given.

208

FARMER, E., and CHAMBERS, E. G.: *The prognostic value of some psychological tests*. Great Britain Medical Research Council, Industrial Health Research Board, Report No. 74, 1936. Pp. 41.

1. SUBJECTS: 14 groups: (a) 95 skilled engineering apprentices, (b) 72, same, (c) 524, same but shorter apprenticeship, (d) 259, same, (e) 347, same,

(f) 339, same, (g) 96, simple upholstering, (h) 51, light casting, (i) 89, drive and repair heavy lorries, (j) 284, same, (k) 121, manual trades, (l) 119, same, (m) 87, visual and auditory signaling, (n) 248, same.

2. TESTS: (1) linguistic intelligence, (2) cube, (3) number setting, (4) choice reaction time, (5) dotting, (6) coordination, (7) pursuit, (8) mechanical aptitude, (9) mechanical ability, (10) forms relation, (11) dial, (12) pressure, (13) sending, (14) receiving, (15) weights, (16) lines, circles, and triangles, (17) group dotting, (18) rings, (19) matchboard, (20) cancellation, (21) substitution, (22) group checking, (23) directions.
3. CRITERION: a practical test of proficiency in the occupation.
4. VALIDITY: correlation between test scores and the practical test of proficiency:

GROUP	TEST												
	1	2	3	4	5	6	7	8	9	10	11	13	14
a	.32	.15			.14	.24					−.05		
b	.47	.32			.03	.19					−.09		
c	.12		.09	.08	.12	.20	.13						
d	.11	.26	.03	.16	.05								
e	.22	.23	.10		.13								
f	.16				.04	.08		.33	.29	.16			
g	−.09	−.12			−.04								
h	−.01				.32	.02							
i	.32	.45			.27	.55			.39	.25			
j	.41	.25								.41			
k	.39									.31			
l	.13									.14			
m	.36				.36					−.03	.36	.25	.24
n	.22										.18	.30	.41

5. RELIABILITY: not given.

209

HUNT, T.: *Measurement in psychology.* New York: Prentice-Hall, Inc., 1936. xx + 471, p. 346.

1. SUBJECTS: 98 employees of a large sales company (presumably salesmen).
2. TESTS: Moss-Hunt-Omwake Social Intelligence Test.

3. CRITERION: rated by a superior executive, 7-point scale, presumably on their ability to deal with people.
4. VALIDITY: correlation of test scores and criterion: .61.
5. RELIABILITY: not given.

210

Moss, F. A.: Report of the Committee on Aptitude Tests for Medical Students. *Journal of the Association of American Medical Colleges*, 1936, 11: 273–286.

1. SUBJECTS: medical students, 5 groups: (a) $N = 249$, (b) $N = 115$, (c) $N = 151$, (d) $N =$ about 1,000, (e) $N =$ about 5,000.
2. TESTS: Medical Aptitude Test.
3. CRITERION: performance on board examinations.
4. VALIDITY: comparison of scores on board examinations for high and low test score groups:

GROUP	TEST SCORE	SCORE ON BOARD EXAMINATION				
	GROUP	FAIL	75–79	80–84	85–89	90 AND OVER
a (N. Y. Board Exam.)	highest ⅖	0	12%	47%	39%	2%
	lowest ⅖	3	27	64	6	0
b (Penna. Board Exam., 1932)	highest ⅖	0	8	38	48	6
	lowest ⅖	5	20	64	11	0
c (Penna. Board Exam., 1933)	highest ⅖	2	18	40	38	2
	lowest ⅖	5	39	43	13	0
d (Nat. Board Exam., Pt. II, 1932)	upper half	0	22	61	11	6
	lower half	11	33	39	17	0
e (Nat. Board Exam., Pt. I, 1933)	upper half	5	24	46	23	2
	lower half	12	40	33	14	1

5. RELIABILITY: not given.

211

ODENWELLER, A. L.: Predicting the quality of teaching. Columbia University, Teachers College Contributions to Education, No. 676, 1936. Pp. 158.

1. SUBJECTS: 560 teachers, graduates of Cleveland School of Education, grades 1 to 6, teaching in 58 secondary schools.
2. TESTS: (1) college marks, (2) ratings of personality, (3) intelligence tests (not specified).
3. CRITERION: ranking for "effectiveness" by principals, assistants, and supervisors; converted into scores.
4. VALIDITY: correlation (product moment) between criterion and other measures:

TEST	CORRELATION
1. Rating of personality by principal and supervisor	.82
2. Rating of personality by 3 teachers in same building	.53
3. College marks	.29
4. Education marks	.26
5. Student teaching marks	.19
6. Intelligence (highest of 3 tests)	−.04

(.113 is 4 times the P.E.)

5. RELIABILITY: intercorrelations of scores from ranking by 3 superiors ($N = 380$): average = .76; range: .69 to .87.

212

SCHULTZ, R. S.: Standardized tests and statistical procedures in selection of life insurance sales personnel. *Journal of Applied Psychology*, 1936, 20: 553–566.

1. SUBJECTS: 2 groups: (a) "industrial" agents of one life insurance company, on the job for one year, N varies from 181 to 259; (b) 31 assistant managers of a life insurance company.

2. TESTS: (1) personal history, (2) Bureau Test VI, (3) Pressey Senior Classification Test, (4) O'Rourke Vocational Test, (5) Strong Vocational Interest Blank, (6) Allport Ascendance-Submission Test, (7) Root Introversion-Extroversion Test, (8) Sales Objection Answer Test.

3. CRITERION: Group a: production record. Group b: ratings by superiors.

4. VALIDITY: Group a: test scores plotted against production records, and the optimal area selected. Tables show per cent selected and per cent rejected of Best, Average, and Poor groups.

	PERSONALITY TESTS			PERSONALITY, INTELLIGENCE, AND INTEREST		
	% SELECTED	% REJECTED	*N*	% SELECTED	% REJECTED	*N*
Best	67.9	32.1	53	54.5	45.5	33
Average	61.8	38.2	149	53.5	46.5	99
Poor	47.4	52.6	57	40.9	59.5*	49

* Error in original table.

Group b: 83 per cent of 16 men rated Good scored above the 50th percentile on the intelligence tests, and above the 25th percentile on personal data; only 20 per cent of 15 men rated Poor have these characteristics.

5. RELIABILITY: not given.

213a

SEARLES, J. A., and LEONARD, J. M.: *Experiments in the mental testing of Detroit policemen.* Detroit Bureau of Governmental Research, No. 141, 1936. Pp. 54.

1. SUBJECTS: 52 patrolmen.

2. TESTS: (1) Army Alpha Examination, (2) Bureau of Public Personnel Sergeant's Test, (3) age, (4) years of service, (5) education.

3. CRITERION: inspector's rating.

4. VALIDITY: correlation of test scores and criterion:

TEST	ZERO ORDER	PARTIAL CORRELATION
3	−.30	.59
4	−.29	−.72
5	.04	−.85
1	.13	.63
2	.07	−.81

5. RELIABILITY: not given.

213b

SEARLES, J. A., and LEONARD, J. M.: *Experiments in the mental testing of Detroit policemen.* Detroit Bureau of Governmental Research, No. 141, 1936. Pp. 54.

1. SUBJECTS: (a) 170 recruits with Army Alpha score above 64, (b) 30 patrolmen considered excellent, (c) 30 patrolmen considered inferior.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) civics test, (3) Moss Social Intelligence Test, (4) Freyd Picture Test, (5) Downey Will-Temperament Test, (6) block locations, (7) mazes, (8) accuracy of observation, (9) steadiness of movement, (10) aiming test, (11) speed of movement.
3. CRITERION: comparison of the 3 groups as to average test scores.
4. VALIDITY: recruits scored better than officers on all tests but 2, 4 and 8, but no figures on significance of differences given. In general, Group b scored better than Group c, but not significantly.
5. RELIABILITY: not given.

213c

SEARLES, J. A., and LEONARD, J. M.: *Experiments in the mental testing of Detroit policemen.* Detroit Bureau of Governmental Research, No. 141, 1936. Pp. 54.

1. SUBJECTS: 73 policemen.
2. TESTS: Army Alpha Examination.

3. CRITERION: (1) dismissal, (2) merits, (3) demerits.

4. VALIDITY: distribution of test scores in relation to criteria:

TEST SCORE	*N*	DISMISSED FOR CAUSE	RESIGNED NOT FOR CAUSE
A	3	1	0
B	8	4	0
C+	22	4	2
C	19	5	0
C−	16	5	1
D	3	2	0
D−	2	2	0

TEST SCORE	*N*	MERITS	MERITS PER MAN	DEMERITS	DEMERITS PER MAN
C+ or better	52	111	2.1	42	0.8
C or less	21	20	0.9	18	0.8
Recommended after reexamination	49	112	2.3	34	0.7
Not recommended	24	19	0.7	28	1.2

5. RELIABILITY: not given.

214

STEWARD, V.: *Selection of sales personnel.* Los Angeles: Steward and Associates, 1936. Pp. 47.

1. SUBJECTS: (a) 306 life insurance agents, (b) 119 life insurance agents.

2. TESTS: Steward Composite Inventory and Examination for 1935.

3. CRITERION: (1) classification by superiors (failure, borderline, successful, very successful) for Group a, (2) actual earnings, for Group b.

4. VALIDITY: correlation of test scores and criterion:

GROUP	CORRELATION COEFFICIENT	CONTINGENCY COEFFICIENT
a	.53	.52
b	.52	.50*

* Coefficient of curvilinear correlation: .57.

5. RELIABILITY: not given.

215a

VITELES, M. S.: *What's new in methods for selecting office workers.* New York: American Management Association, Office Management Series No. 75, 1936, 4–10.

1. SUBJECTS: 67 key punch operators.
2. TESTS: (1) Taylor Number Test, (2) Minnesota Vocational Test for Clerical Workers, (3) speed of finger movement, (4) substitution, (5) number writing, (6) hand dynamometer.
3. CRITERION: average hourly production, correlated with test scores.
4. VALIDITY: multiple correlation: amount of education, Taylor Number, and Minnesota Vocational Test for Clerical Workers, Name Series: .50.

   Multiple correlation: Minnesota Vocational Test for Clerical Workers, Taylor Numbers: .48.
5. RELIABILITY: correlation of alternate week's production: .90.

215b

VITELES, M. S.: *What's new in methods for selecting office workers.* New York: American Management Association, Office Management Series No. 75, 1936, 4–10

1. SUBJECTS: 42 income tax coders.
2. TESTS: (1) Trabue Completion Test, modified, (2) Minnesota Vocational Test for Clerical Workers, Name Series, (3) Minnesota Vocational Test for Clerical Workers, Number Series, (4) number writing, (5) arith-

metic, (6) Taylor Number Test, Trials 1 and 2, (7) O'Rourke Vocabulary Test, Form Z.

3. CRITERION: average hourly errorless production, correlated with test scores.
4. VALIDITY:

TEST	*r*
1	.33
2	.43
3	.57
4	.36
5	.48
6	.61
7	.20

5. RELIABILITY: not given.

215C

VITELES, M. S.: *What's new in methods for selecting office workers.* New York: American Management Association, Office Management Series No. 75, 1936, 4–10.

1. SUBJECTS: 200 clerical employees in 6 companies.
2. TESTS: L.O.M.A. (Life Office Management Association) Test No. 1 (Revision of Bureau Test VI).
3. CRITERION: promotion at end of 5 to 10 years.
4. VALIDITY: with score of 80, 4 chances out of 10 of promotion to second level clerical job, no chance of promotion to third level. With score of 141, no chance of remaining at lowest level, 4 chances out of 10 of reaching second level, 6 chances out of 10 of reaching third level.
5. RELIABILITY: not given.

216

CANDEE, B., and BLUM, M.: Report of a study done in a watch factory. *Journal of Applied Psychology*, 1937, 21: 572–582.

1. SUBJECTS: 37 girls employed in a watch factory (presumably assemblers).
2. TESTS: (1) O'Connor Finger Dexterity Test, (2) O'Connor Tweezer Dexterity Test.

3. CRITERION: rating by foreman on 5-point scale; 20 best and 17 worst in plant.

4. VALIDITY: correlation between ratings and test scores: Test 1: .26 ± .12; Test 2: .03.

5. RELIABILITY: not given.

217

CLARKE, W. V.: The evaluation of employment tests. *Personnel*, 1936–37, 13: 133–136.

1. SUBJECTS: 100 cashiers, Macy's Department Store.*

2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) Bernreuter Personality Inventory, (3) a work sample test in amount checking, (4) a work sample test in change making (time and errors), (5) a work sample test of manual dexterity.

3. CRITERION: (1) actual production, (2) actual errors, (3) supervisor's ratings.

4. VALIDITY: correlation of test scores and criteria (Pearsonian Product Moment correlations.)*

TEST	CRITERION 1	CRITERION 2	CRITERION 3
1	.00	−.06	.25
3	−.02	.07	.02
4—time	.23	−.04	.06
4—errors	.36	.39	.06
5	.31	.10	.39

Correlation of Test 2, extroversion, with "production efficiency": .57.

Multiple correlation of tests and criterion: .41.

All the "best" cashiers are in the 80-to-110 I.Q. group.

5. RELIABILITY: rank order correlation of supervisor's ratings and actual production for a small group of subjects: .08. Test-retest reliabilities ($N = 100$): Test 4, time: .83; Test 5: .71; Test 1: .92.

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* Personal communication, July 20, 1948.

218

COPELAND, H. A.: Validating two tests for census enumeration. *Journal of Applied Psychology*, 1937, 21: 230–232.

1. SUBJECTS: 4 groups: (a) 38 supervisors, (b) 56 clerks, (c) 145 enumerators, (d) 276 enumerators, all census workers.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, Form D, (2) Minnesota Vocational Test for Clerical Workers.
3. CRITERION: for Groups a, b, and c: efficiency ratings by supervisors; for group d: production records (number of contacts).
4. VALIDITY: correlation of test score and criterion:

GROUP	TEST 1	TEST 2
a—1st rating	.22	.12
—2nd rating	.23	.28
b	.07	.18
c	.14	.20
d	.18	.01

5. RELIABILITY: correlation of 1st and 2nd ratings for Group a: .58.

219

DAVIDSON, C. M.: Analysis of clerical tests. *Personnel Journal*, 1937–38, 16: 95–98.

1. SUBJECTS: 49 clerical employees, 4 life insurance companies, different job levels.
2. TESTS: (1) Bureau Test VI: opposites and number series, (2) Thurstone Examination in Clerical Work: spelling, proverbs, and arithmetic, (3) Modified Thurstone Examination in Clerical Work: spelling, arithmetic, proverbs, and classification.

3. CRITERION: job level attained after 5 or more years; 3 levels: simple clerical, complicated clerical, and decision-making jobs.

4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION	STANDARD ERROR
1	.82	±.05
2	.74	±.06
3	.79	±.05

5. RELIABILITY: not given.

220

DAVIDSON, C. M.: Evaluation of clerical tests. *Personnel Journal*, 1937–38, 16: 57–64.

1. SUBJECTS: 94 clerical workers in 4 life insurance companies, in simple clerical, complicated clerical, and decision-making jobs; 75 females, 19 males.

2. TESTS: (1) Bureau Test VI, (2) Thurstone Examination in Clerical Work, (3) Modified Thurstone Examination in Clerical Work, (4) Minnesota Vocational Test for Clerical Workers, (5) O'Rourke General Classification Test, Senior Grade.

3. CRITERION: (1) supervisor's ratings (a second supervisor checked ratings of the first), (2) job level attained after 5 or more years (3 levels: simple clerical, complicated clerical, and decision-making jobs).

4. VALIDITY: correlation of test scores and criteria:

CRITERION 1

TEST	N	CORRELATION	STANDARD ERROR
1	94	.41	.09
2	94	.44	.08
3	94	.37	.09
4—numbers	94	.27	.10
4—names	94	.29	.09
5	82	.40	.09

CRITERION 2

TEST	*N*	CORRELATION	STANDARD ERROR
1	49	.75	.06
2	49	.71	.07
3	49	.65	.08
4—numbers	49	.07	.14
4—names	49	.34	.13
5	49	.77	.06

Correlation (tetrachoric) between Criterion 1 and test scores, using S's in simple clerical jobs only ($N = 24$):

TEST	CORRELATION	STANDARD ERROR
1	.77	.08
4—numbers	.70	.11
4—names	.59	.14

5. RELIABILITY: not given.

221

DRAKE, C. A.: Aptitude tests help you hire. *Factory Maintenance and Management*, 1937 (June), 95: 55–57, 92–93.

1. SUBJECTS: 40 machine operators in a pencil factory, type not specified, out of a total of 79 in the department.
2. TESTS: Pinboard test.
3. CRITERION: ranking of all 79 operators in the department by the foreman.
4. VALIDITY: correlation between foreman's ranking and test score: .59. Critical score set at 170 sec. No really good operators scored more than 170; all but 2 who scored 170 or more were in lower half of foreman's ranking.
5. RELIABILITY: reliability of foreman's ranking: correlation of 2 rankings 1 week apart: .92.

222

FRAZIER, L. R.: *Study of manual versatility.* Unpublished, on file with the Personnel Research Federation. Original not seen, data taken from W. V. Bingham: *Aptitudes and aptitude testing*. New York: Harper and Brothers, 1937. Pp. 287–290.

1. SUBJECTS: 115 female paper box makers.
2. TESTS: Frazier's card-dropping tests.
3. CRITERION: comparison of "satisfactory" and "below-satisfactory" employees on basis of test scores.
4. VALIDITY: difference ratio between means (for weighted scores) of the 2 groups = 5.3 times its standard error.
5. RELIABILITY: not given.

223

HALLBAUER, U.: Bedeutung der inneren Beherrschtheit für die Kraftfahrereignung. *Zeitschrift für angewandte Psychologie*, 1937–38, 53: 129–232.

1. SUBJECTS: 2 groups: (a) 12 older drivers, (b) 8 apprentice drivers, apparently bus drivers.
2. TESTS: (1) Rupp Falling Rod Test, (2) reaction time to series of colors (on Kymograph drum), multiple choice reaction, (3) same as test 2, with lamps of different colors, (4) reaction time to red lamps in different parts of the field, S in a car seat with steering wheel, etc. (responses: to turn wheel in various directions, brakes, accelerator, etc.), (5) Rupp's test of best course to follow (on Kymograph), (6) Rupp's following-a-twisting-line test, (7) Poppelreuter's follow-a-road test (revised), (8) following a road, but with metal borders which prevented going outside track and registered contact, (9) hand ergograph, (10) a test of attention (Klemm) with metronome and bell signal (S to adjust metronome), (11) a test of attention (Giese): cancellation of figures.
3. CRITERION: accident rate (small corrections in rank based on supervisor's judgment).
4. VALIDITY: correlation (rank order) between test rank and accident rank:

	TEST											
	1	2	3	4	5*a*	5*b*	6	7	8_1	8_2	11	10
Group a:												
Time	.01	−.44	−.29	−.37	—	—	.37	−.23	−.11	.09	.36	.22
Accuracy	—	.31	.62	.13	.29	−.21	−.55	.44	.66	.27	.17	—
Group b (after 2 years):												
Time	.12	.27	.17	−.04	—	—	−.01	.01	−.87	−.29		
Accuracy	—	.44	.44	−.03	.59	.40	−.12	.60	.40	.53		

5. RELIABILITY: correlation (rank order) of superior's judgments 2 years apart: Group a: .86, Group b: .59.

224

HARRELL, W.: The validity of certain mechanical ability tests for selecting cotton mill machine fixers. *Journal of Social Psychology*, 1937, 8: 279–282.

1. SUBJECTS: 95 machine fixers, 3 groups: (a) 45 loom fixers, (b) 40 carding department employees, (c) 10 spinning frame fixers.
2. TESTS: a 15-item adaptation of the Stenquist Mechanical Assembly Test.
3. CRITERION: Group a: rating by supervisors on a 6-point scale. Group b: rating by overseer as to mechanical ability. Group c: rating by 3 supervisors as to mechanical ability.
4. VALIDITY: tetrachoric correlation of test scores and criterion:

Group a..........	.42
Group b..........	.84
Group c..........	.78

5. RELIABILITY: not given.

225

HEARNSHAW, L. S.: Selection tests for paper sorters. *Human Factor*, 1937, 11: 146–153.

1. SUBJECTS: 18 paper sorters, female, in a paper mill; all over 25 years of age, and with more than 6 months' experience.

2. TESTS: (1) visual acuity, (2) color discrimination, (3) hand and arm dexterity, (4) choice reaction, (5) speed of perception, (6) tactile discrimination.
3. CRITERION: output for one quarter.
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
3 and 4	.71 ± .08
3	.70 ± .08
6	.61 ± .10
4	.52 ± .12
1	.23 ± .15
2	.12 ± .16
5	−.11 ± .16

5. RELIABILITY: quarterly output correlated with output for the previous quarter: .74 ± .06.

226

LAUGIER, H., KOWARSKI, D., and WEINBERG, D.: Un essai de sélection psychophysiologique d'ouvriers soudeurs. *Le Travail Humain*, 1937, 5: 182–211.

1. SUBJECTS: 133 male apprentice welders (gas and electric arc).
2. TESTS: (1) weight, (2) height, (3) distance from elbow to floor, (4) length of hand, (5) lung capacity, (6) arterial pressure, (7) heart rate, (8) hand dynamometer, (9) "tenacity," (10) a tracing test, (11) a steadiness test, (12) reaction time, (13) stereoscopic vision, (14) fine visual discrimination (Fishgold Test), (15) recognition of colors, (16) recognition of forms, (17) bisecting lines, (18) glare recovery, (19) visualization, (20) understanding of technical equipment, (21) mechanical aptitude.
3. CRITERION: classified as Good ($N = 23$), Average ($N = 86$) or Poor ($N = 24$) by their supervisors.
4. VALIDITY: comparison of mean standard scores for the 3 groups (in some tests N is slightly less than indicated):

TEST	GROUP		
	POOR	AVERAGE	GOOD
1	0.00	0.10	−0.52
2	−0.96	0.12	0.04
3	−0.58	0.02	−0.09
4	−0.58	0.14	0.18
5	−2.70	0.36	0.91
6	0.05	−0.11	0.74
7	−0.04	0.08	−0.09
8	−0.96	0.24	0.43
9	−1.30	0.10	0.83
10	−2.05	0.30	0.70
11	−2.17	0.00	2.00
12	−1.65	0.21	0.96
13	−2.13	0.58	−0.44
14	−1.81	0.12	2.06
15	−3.57	0.86	0.82
16	−1.87	0.12	1.48
17	−1.79	0.00	1.43
18	−3.19	0.37	1.73
19	−0.67	0.06	0.35
20	−1.65	0.35	0.52
21	−1.78	0.24	1.26

5. RELIABILITY: not given.

227

LAWE, F. W., and RAPHAEL, W.: Seven years' experience of tests for sales assistants. *Human Factor*, 1937, 11: 137–145.

1. SUBJECTS: 78 sales girls in a department store.
2. TESTS: (1) a "cycle omnibus" test for general knowledge, vocabulary, arithmetic, tact, and reasoning, (2) a test of immediate memory for instructions.
3. CRITERION: rated as Excellent, Good, or Below average by superiors.

4. VALIDITY: number who fall between the minimum and maximum scores for each rating (minimum: 40, maximum: 69):

RATED	ACCEPTABLE SCORE	UNACCEPTABLE SCORE
Excellent	21	6
Good	24	9
Below average	7	11
Total *N*	52	26

5. RELIABILITY: not given.

228

STEAD, W. H.: The department store salesperson. *Occupations*, 1937, 15: 513–515.

1. SUBJECTS: 109 department-store salespersons.
2. TESTS: (1) O'Rourke Survey Test of Vocabulary, (2) Occupational Research Program Arithmetic Test, (3) Taylor Number Test, (4) Minnesota Vocational Test for Clerical Workers, (5) Occupational Research Program Number-copying Test, (6) Occupational Research Program Revision, Trabue Completion Test, (7) Occupational Research Program Interest Questionnaire, (8) Occupational Research Program Multiple Choice Personality Items, (9) Personal Appearance Rating, (10) Occupational Research Program Personal Data Sheet.
3. CRITERION: 8 nonclerical measures of job success, all based on objective records (example: net dollars per sale).
4. VALIDITY: multiple correlation of test scores and criterion: 3 best tests, 1, 4, and 6: .32; tests 1, 4, 6, 8, 7, and 10: .65. Single test giving highest correlation with criterion was 10 (figure not given).
5. RELIABILITY: correlation of one year's production with succeeding year's production: .83 to .98 for various measures.

229

ANON.: Selection of streetcar motormen. *Journal of the American Medical Association*, 1938 (Feb. 12), 110: 523.

1. SUBJECTS: 190 streetcar motormen (Belgium).
2. TESTS: (1) Dynamometer, (2) Auditory Reaction Time, (3) Tachodometer Test, (4) Diffuse Attention Test.

3. CRITERION: service records (apparently to some extent judgment of superiors).
4. VALIDITY: 11 good on criterion, failed test; 7 inefficient on criterion, passed test. (No further information.)
5. RELIABILITY: not given.

230

BILLS, M. A.: Relation of scores in Strong's interest analysis blanks to success in selling casualty insurance. *Journal of Applied Psychology*, 1938, 22: 97–104.

1. SUBJECTS: 588 casualty insurance salesmen.
2. TESTS: Strong Vocational Interest Blank; life insurance and real estate sales keys.
3. CRITERION: rating by managers on a 5-point scale (later condensed).
4. VALIDITY: tables showing per cent successful for scores on the combined scales at 3 age levels:

RATING	SCORES			
	+6	+5–+4	+3–−2	−3–−6
1. Under 25 years of age:				
Success	59%	67%	45%	25%
Failure	41%	33%	55%	75%
N	39	43	71	47
2. Ages 25–29:				
Outstanding success	33%	18%	12%	6%
Success	55%	56%	55%	31%
Failure	12%	26%	33%	63%
N	42	45	51	35
3. Over 30 years of age:				
Outstanding success	29%	24%	13%	7%
Success	53%	50%	52%	43%
Failure	18%	26%	35%	50%
N	58	42	71	44

5. RELIABILITY: not given.

231

CARTER, L. F.: Social work ability. *Personnel Journal*, 1938–39, 17: 1–3.

1. SUBJECTS: 38 social workers.

2. TESTS: (1) personal history: education and experience, (2) interview (rating by 3 interviewers), (3) an information test in fields related to social work, 470 items.

3. CRITERION: combined ratings of 4 superiors.

4. VALIDITY: correlation between test scores and criterion:

TEST	CORRELATION
1	.34
2	.50
3—470 items	.18
3—150 best items	.80

5. RELIABILITY: correlation between ratings of various raters: .60 to .80.
   Reliability of the tests:

   Test 1 (2 scorings of the blank): .94
   Test 2 (one rater correlated with another): .7
   Test 3: not given.

232

DE SILVA, H. R., CLAFLIN, R. G., and SIMON, W. J.: Making safer bus drivers. *Transit Journal*, 1938, 82: 450–451, 471–472.

1. SUBJECTS: 163 bus drivers.

2. TESTS: (1) accelerator reaction time, (2) braking reaction time, (3) steering coordination, (4) vigilance, (5) glare and night vision, (6) visual keenness, (7) depth perception, (8) astigmatism, (9) color vision, (10) tunnel vision, (11) speed estimation.

3. CRITERION: number of accidents.

4. VALIDITY: best 10 per cent and worst 10 per cent as measured by deviation from average test profile compared as to number of accidents, with length of service held constant:

	WORST GROUP	BEST GROUP	PERCENTAGE FEWER ACCIDENTS OF BEST DRIVERS
Total accidents	218	202	7.3
Chargeable accidents	112	88	21.4

5. RELIABILITY: not given.

233

DODGE, A. F.: Social dominance and sales personality. *Journal of Applied Psychology*, 1938, 22: 132–139.

1. SUBJECTS: 75 salespersons from a large department store: 41 male, 34 female.
2. TESTS: Bernreuter Personality Inventory; a new scoring key developed.
3. CRITERION: rating by personnel manager and by department heads, 5 categories.
4. VALIDITY: correlation between ratings and scores on new key:

Men: $r = .71 \pm .07$
Women: $r = .39 \pm .14$

5. RELIABILITY: not given.

234

DODGE, A. F.: What are the personality traits of the successful salesperson? *Journal of Applied Psychology*, 1938, 22: 229–238.

1. SUBJECTS: 75 salespersons.
2. TESTS: Bernreuter Personality Inventory: item analysis.
3. CRITERION: ratings by personnel manager and department heads.
4. VALIDITY: a list of traits characteristic of successful salespeople, and the extent to which the successful are differentiated from the unsuccessful:

TRAIT	NUMBER OF ITEMS	PER CENT DIFFERENTIATION
Is not moody, does not worry	7	27
Self-confident, self-sufficient	6	18
Aggressive, assumes responsibility	3	15
Social	5	16
Free from self-consciousness	4	17
Not resentful of criticism or discipline	2	17
Radical and unconventional	2	15
Little tendency to talk about self	3	16

5. RELIABILITY: not given.

235

DRAKE, C. A.: Inspection for inspectors. *American Machinist*, 1938, 82: 766–768.

1. SUBJECTS: 40 inspectors.
2. TESTS: Pin Board Test of Manual Dexterity.
3. CRITERION: ranking by foremen compared with rank on test.
4. VALIDITY: critical score placed at 169 seconds. All but 2 of those below acceptable point on test were also in the lower half of the foremen's ratings.
5. RELIABILITY: not given.

236

HISCOCK, W. G.: Selection tests for chemical process workers. *Occupational Psychology*, 1938, 12: 178–186.

1. SUBJECTS: 174 recruits, male, chemical process workers in the dye industry.
2. TESTS: (1) filling 12 jars to marked heights, (2) regulating flow through a jar so as to maintain level at a certain height, (3) filling 3 jars of yellow liquid with blue to match a standard green, (4) reading scales

visible only while a light is on, (5) arithmetic, (6) dexterity and control, (7) judgment of color, viscosity, and turbidity, (8) memory for instructions, (9) memory for spatial position, (10) alertness of observation.

3. CRITERION: assumed to be opinion of superior as to "suitability"; also whether discharged or transferred.
4. VALIDITY: subsequent fate of those passing or failing test battery (passing mark set at 666 out of 1,000): No recruit passing the test has been discharged for unsuitability; those above 750 on test battery are, with few exceptions, the most suitable. Those who scored below 666 but were hired anyway have all been discharged or transferred.
5. RELIABILITY: not given.

237

MITCHELL, J. H.: An experiment in the selection of sales managers. *Occupational Psychology*, 1938, 12: 308–318.

1. SUBJECTS: 42 district managers, 120 salesmen; speciality sales.
2. TESTS: (1) vocabulary, (2) intelligence, (3) ascendance-submission, (4) word association, (5) completing forms, (6) word series, (7) topics, (8) ink blots.
3. CRITERION: success measured by survival on the job.
4. VALIDITY: comparison of successful district managers with salesmen in terms of test scores:

TEST	DIFFERENCE BETWEEN MEANS	PROBABLE ERROR
1	35	3.66
2	21	5.87
3	1	2.11
4	22	2.13
5	2	0.66
6	8	1.58
7	1	18.07
8	4	0.82

All differences significant except Tests 3 and 7.

5. RELIABILITY: not given.

238

Oleen, H. D.: Why pick inspectors who can't inspect? *Factory Maintenance and Management*, 1938 (January), 96: 83–85.

1. SUBJECTS: 13 inspectors of pencils.
2. TESTS: sorting metal tubes of 6 colors into 6 compartments, rejecting the imperfect ones. (Other tests but no data or *N* given.)
3. CRITERION: a work sample: inspecting 1,150 pencils.
4. VALIDITY: no subject taking longer than the average time on the criterion test scored better than the 32nd percentile on the sorting test.
5. RELIABILITY: not given.

239

Thomsen, C. J.: Tall, young, and single. *Personnel Journal*, 1938–39, 17: 175–179.

1. SUBJECTS: 122 shirt pressers in a shirt manufacturing company, female.
2. TESTS: personal history data (the 6 important items: age, schooling, marital status, descent, height, weight).
3. CRITERION: average hourly earnings for two 8-week periods, used to divide total group into 3 groups: Successful, Mediocre, and Unsuccessful.
4. VALIDITY: number above and below a critical score of 449 (total weighted scores) for each of the 3 groups:

GROUP	BELOW CRITICAL SCORE	ABOVE CRITICAL SCORE	*N*
Successful	4	32	36
Mediocre	12	25	37
Unsuccessful	29	20	49
Total *N*	45	77	

5. RELIABILITY: not given.

240

WALLACE, N., and TRAVERS, R. M. W.: A psychometric sociological study of a group of speciality salesmen. *Annals of Eugenics* (London), 1938, 8: 266–302.

1. SUBJECTS: 55 speciality salesmen.
2. TESTS: (1) controlled word association, (2) ink blots (number of images), (3) R/W test, (4) free word association, (5) cancellation, (6) fluctuation in ambiguous figures, (7) form completion. Others given which showed no differences between the groups.
3. CRITERION: ability to make a comfortable living versus inability to make a living. The 17 most successful compared with 18 failures.
4. VALIDITY:

TEST	DIFFERENCE BETWEEN GROUP MEANS	*t*
1	232.5	3.40
2	6.6	3.00
3	16.7	2.56
4	6.7	1.45
5	5.3	2.01
6	8.5	1.41
7	5.1	1.34

5. RELIABILITY: not given.

241

ANON.: *Analysis of 1935–37 experience in selecting new men for shop occupations.* Privately printed monograph, Western Electric Company, Hawthorne Plant, 1939. Original not seen; data taken from J. Tiffin: *Industrial Psychology*. 2d ed. New York: Prentice-Hall, Inc., 1947. xxi + 553, pp. 96, 138–140.

1. SUBJECTS: 749 men hired for bench work.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) O'Connor Finger Dexterity Test, (3) Hayes Pegboard.

3. CRITERION: (1) per cent leaving company (not resignation), (2) personnel rating, (3) increase in weekly earnings, (4) progress in labor grade, (5) per cent without accidents, (6) per cent without illness.
4. VALIDITY: Test 1: "practically" no relation to criterion on shop assignments, but indicates ability to progress to higher level shop jobs or office jobs.

   Comparison of those scoring above average with those scoring below average on Tests 2 and 3 in terms of the various criteria:

CRITERION	TEST 2		
	ABOVE AVERAGE	BELOW AVERAGE	DIFFERENCE
1	32.8	43.6	+10.8
2	75.9	72.8	+3.1
3—piece-rate employees	$ 9.91	$ 9.54	$+0.37
—day-rate employees	$ 5.24	$ 5.43	$−0.19
4	0.76	0.78	−0.22
5	47.3	45.4	+1.9
6	88.2	88.3	−0.1

CRITERION	TEST 3		
	ABOVE AVERAGE	BELOW AVERAGE	DIFFERENCE
1	34.2	41.6	+7.4
2	76.1	72.6	+3.5
3—piece-rate employees	$10.10	$ 9.36	$+0.74
—day-rate employees	$ 5.54	$ 5.14	$+0.40
4	0.82	0.72	+0.10
5	45.8	47.4	−1.6
6	88.8	87.7	+1.1

5. RELIABILITY: not given.

242

ANDERBERG, R.: Selecting personnel for the Swedish State Railways with the aid of psychological tests. *Occupational Psychology*, 1939, 13: 211–222.

1. SUBJECTS: 117 railway officials of 4 districts.
2. TESTS: (1) intelligence, (2) reaction, (3) attention, (4) memory.

3. CRITERION: rating by superiors as satisfactory (A) or not wholly satisfactory (B) .

4. VALIDITY: comparison of A and B men on basis of percentage passing or not passing critical score:

RATING	PER CENT PASSING	PER CENT NOT PASSING
A	45	7
B	13	35

5. RELIABILITY: not given.

243

BENGE, E. J.: *The use of tests in employment and promotion, Problem 3: Selection of Salesmen.* National Industrial Conference Board, Inc., Studies in Personnel Policy, No. 14, 1939, 13–18.

1. SUBJECTS: 180 salesmen for a large rubber company.

2. TESTS: a 50-item multiple-choice test on "dominance," "people-interest," "judgment," and sales information.

3. CRITERION: a composite of the following: rating by the district manager (accounting for 70 to 80 per cent of the total), success in a sales training school, per cent of salary increase per year of service and age.

4. VALIDITY: comparison of test scores of successive fifths of the criterion scale:

CRITERION	TEST SCORE
Highest 5th..........	121
Second 5th	109
Third 5th	100
Fourth 5th	94
Lowest 5th	79

Correlation of test scores and criterion: "about .60." Were not able to correct for experience.

5. RELIABILITY: not given.

244

KURTZ, A. K.: Selecting salesmen by personal history items: methods and results. Abstract in *Psychological Bulletin*, 1939, 36: 528.

1. SUBJECTS: 10,111 life insurance salesmen, 2 additional groups of 743, 878 salesmen.
2. TESTS: personal history items, 10-item rating chart.
3. CRITERION: (1) sales, 1st 1 and 2 years, (2) whether men remained in business 1 or 2 years.
4. VALIDITY: proportion of men with A ratings continuing work for at least 1 year is nearly double that of E men (high and low groups, presumably). Of survivors, average sales of A men are triple those of E men. Total 1st-year sales are 5 times as great if A, rather than E men are hired.
5. RELIABILITY: not given.

245

MCMURRY, R. N.: A scientific procedure for the selection of salesmen. *Personnel*, 1938–39, 15: 165–183.

1. SUBJECTS: 1,685 salesmen given tests at beginning of employment, but not selected by tests. (*N* not given for scores used in validation. Best guess is about 100.)
2. TESTS: (1) personal history, (2) a sales personality test, (3) an analytical interview.
3. CRITERION: classified into 4 groups on basis of average weekly sales, length of service, and supervisors' ratings. I and II desirable, III and IV not desirable.
4. VALIDITY: using Tests 1 and 2: can eliminate 13, or 22.4 per cent of Group III and 14, or 31.8 per cent of Group IV, while eliminating only one man in Group I and 2 in Group II. Setting critical score for Test 2 between 28 and 29, and for Test 1 between 8 and 9, eliminates 27 of Groups III and IV. Using more rigid standards: can eliminate 51.7 per

cent of III, 61.5 per cent of IV, losing 14.4 per cent of good men (only 1 in Group I). With Test 3 (only 52 S's), 2 interviewers reject 17 per cent of good groups, eliminate 46 per cent of poor groups.

5. RELIABILITY: not given.

246

ROSSETT, N. E., and ARAKELIAN, P.: A test battery for the selection of panel dial switchmen. *Journal of Applied Psychology*, 1939, 23: 358–366.

1. SUBJECTS: 50 applicants for preliminary training in Panel Dial School.
2. TESTS: (1) ferromagnetism and electromagnetism, (2) alternating current circuits and current calculation, (3) arithmetic, (4) knowledge of apparatus function and adjustment, (5) 3 mazes to test circuit tracing and circuit function.
3. CRITERION: ranking by instructors in Panel Dial School.
4. VALIDITY: multiple correlation between weighted test battery and criterion: .68.
5. RELIABILITY: reliability of criterion not given; reliability of test battery: .85.

247

SHEDDAN, B. R., and WITMER, L. R.: Employment tests for relief visitors. *Journal of Applied Psychology*, 1939, 23: 270–279.

1. SUBJECTS: 61 relief visitors.
2. TESTS: (1) Ohio State University Psychological Test, Form 18, (2) Moss, Hunt & Omwake Social Intelligence Test, (3) A.C.E. Cooperative General Culture Test, (4) A.C.E. Cooperative Economics Test, (5) Thurstone Personality Schedule, (6) Relief Attitude Scale.
3. CRITERION: a composite score derived from merit ranking and a test of technical information.
4. VALIDITY: multiple correlation of highest tests in battery and criterion: Tests 1, 4, 5, 2, 6: $R = .73$. Forecasting efficiency of 33 per cent.
5. RELIABILITY: reliability of the test of technical information: .92 ± .001; correlation between test score (technical information) and merit ranking: $-.06$.

248

TIFFIN, J., and GREENLY, R. J.: Employee selection tests for electric fixture assemblers and radio assemblers. *Journal of Applied Psychology*, 1939, 23: 240–263.

1. SUBJECTS: 3 groups: (a) 36 workers, preparing ends of wire; (b) 33 workers, assembling plug and wire; (c) 44 assemblers of radios.
2. TESTS: (1) O'Connor Finger Dexerity Test, (2) Precision of Hand Movement Test, (3) Keystone Visual Safety Tests, (4) Otis Self-administering Test of Mental Ability, higher form.
3. CRITERION: ratings on quantity and quality of production, production records and general efficiency ratings.
4. VALIDITY: correlation between criteria and tests:

TEST	CRITERION			
	QUALITY RATING	QUANTITY RATING	PRODUCTION RECORD	EFFICIENCY RATING
Group a:				
1		(no significant correlations)		
2	.63	.07	−.16	
3—ametropia, near	.08	−.51	−.09	
far	.18	−.51	−.03	
color vision	.06	−.51	−.08	
4	−.11	−.37	−.23	
Group b:				
1 (experience constant)	.21	.15	.22	.33
2	.24	.05	.49	.42
3		(not reported)		
4 (experience constant)	−.09	.20	−.05	.00
Group c: (experience constant)				
1				.27
2 (composite score)				−.18
(error score)				.23
3—visual acuity				.38
—ametropia, near				−.16
—color vision				.29

Multiple correlation of dexterity, hand precision (error), visual acuity, and color vision with criterion = .60.

5. RELIABILITY: Group c: reliability of ranking by 4 supervisors: .77.

249

TIFFIN, J., and GREENLY, R. J.: Experiments in the operation of a punch press. *Journal of Applied Psychology*, 1939, 23: 450–460.

1. SUBJECTS: 25 experienced punch press operators.
2. TESTS: an experimental testing punch press, with 200 sheets to be punched.
3. CRITERION: efficiency ratings by 2 foremen, rank order.
4. VALIDITY: correlations between test scores and ratings:

TEST	POOLED SPEED RATING	POOLED ACCURACY RATING	POOLED SAFETY RATING
Speed	.63	−.55	−.15
Accuracy	.15	.03	.60

5. RELIABILITY: reliability of ratings varies from .04 to .40.
   Reliability of test: time score: .97; error score: .74.

250

ANDERBERG, R., and WESTERLUND, G.: Psychological testing of abilities and personnel selection. *Acta Psychologica* (Amsterdam), 1940–41, 5: 16–52.

1. SUBJECTS: 119, in 4 textile factories. Male weavers, female spinners treated as one group.
2. TESTS: (1) Visual acuity; 12 S's discontinued because of visual defects, (2) color vision; 5 per cent of males, 1 female had defects, (3) the "complex" test: a sort of job sample, but with special apparatus; requires "distribution" of attention, (4) an intelligence test, patterned after that of Swedish Navy, but in industrial terms.

3. CRITERION: S placed in one of two groups, A (better) or B, according to the following criteria: (1) income from piece work, (2) criticism for defective output, (3) foremen's ratings. Group A had a total of 65 workers: 30 male, 35 female; Group B had 42 workers: 20 male, 22 female.

4. VALIDITY:

TEST 3

GROUP	ABOVE CRITERION SCORE	BELOW CRITERION SCORE
A	58%	3%
B	17	22

Test 4 showed no differences between A and B groups.

5. RELIABILITY: not reported.

251

BAKER, H. J., and VOELKER, P. H.: *Detroit Retail Selling Inventory, Manual.* Bloomington, Ill.: Public School Publishing Company, 1940.

1. SUBJECTS: 312 retail salesclerks in 7 different types of retail stores. (205 superior and 107 inferior salesclerks, selected on basis of sales production record; superior group contained the highest 2 to 10 per cent of clerks in the given store, inferior group contained the lowest 1 to 5 per cent in given store.)
2. TESTS: Detroit Retail Selling Inventory.
3. CRITERION: sales production records.
4. VALIDITY: comparison of per cent of superior and inferior clerks falling into each quartile of test scores:

	LOWER QUARTILE	2ND QUARTILE	3RD QUARTILE	UPPER QUARTILE
Superior	6%	23%	45%	26%
Inferior	25	41	30	4

5. RELIABILITY: not given for criterion.

252a

Bellows, R. M.: Studies of clerical workers. Chap. VIII in W. H. Stead, C. L. Shartle *et al.: Occupational counseling techniques.* New York: American Book Company, 1940. ix + 273, pp. 140–144.

1. subjects: operators of alphabetic duplicating card-punch machines, (a) 113 day shift operators, (b) 121 night shift operators.
2. tests: (1) O'Rourke Survey Test of Vocabulary, (2) Minnesota Vocational Test for Clerical Workers, Number Series, (3) Minnesota Vocational Test for Clerical Workers, Name Series, (4) Worker-analysis Section Sentence Completion, (5) MacQuarrie Test for Mechanical Ability, Tracing, (6) MacQuarrie Test for Mechanical Ability, Tapping, (7) MacQuarrie Test for Mechanical Ability, Dotting, (8) MacQuarrie Test for Mechanical Ability, Copying, (9) MacQuarrie Test for Mechanical Ability, Location, (10) MacQuarrie Test for Mechanical Ability, Blocks, (11) MacQuarrie Test for Mechanical Ability, Pursuit, (12) Taylor Number Test, Number Finding, (13) Worker-analysis Section Letter-Digit Substitution, (14) Worker-analysis Section Personal Data.
3. criterion: errorless production.
4. validity: correlation of test scores and criterion:

TEST	CORRELATION	
	GROUP a	GROUP b
1	.04	.09
2	.31	.33
3	.24	.32
4	.06	.22
5	.05	.16
6	.25	.12
7	.19	.27
8	.24	.05
9	.07	.03
10	−.04	−.04
11	.10	.13
12	.04	.13
13	.30	.38
14	.18	.36

Multiple correlation of Tests 2, 13, 6, 7, and 14 (selected items) and criterion (selected by Wherry-Doolittle Technique): .45 for combined groups, .37 for Group a, .53 for Group b.

BATTERY SCORE GROUP	PER CENT OF OPERATORS IN CRITERION SCORE GROUP		
	LOWEST THIRD	MIDDLE THIRD	HIGHEST THIRD
Highest third	19	29	52
Middle third	23	45	32
Lowest third	57	26	17

5. RELIABILITY: correlation of data for odd and even periods, corrected by the Spearman-Brown formula:

Number of cards punched per hour:	Day shift, .95
	Night shift, .96
Number of errors per card:	Day shift, .89
	Night shift, .92

252b

BELLOWS, R. M.: Studies of clerical workers. Chap. VIII in W. H. Stead, C. L. Shartle *et al.: Occupational counseling techniques.* New York: American Book Company, 1940. ix + 273, pp. 144–146.

1. SUBJECTS: (a) 98 coding clerks, (b) 42 coding clerks.
2. TESTS: (1) O'Rourke Survey Test of Vocabulary, (2) Minnesota Vocational Test for Clerical Workers, Number Series, (3) Minnesota Vocational Test for Clerical Workers, Name Series, (4) Taylor Number Test, Number Finding, (5) Worker-analysis Section Letter-Digit Substitution, (6) Worker-analysis Section Number Writing, (7) Worker-analysis Section Personal Data, (8) Worker-analysis Section Sentence Completion.
3. CRITERION: average hourly errorless production for a 4-week period.
4. VALIDITY: correlation of test scores and criterion, Group a:

TEST	CORRELATION
1	.21
2	.38
3	.46
4	.20
5	.30
6	.48
7	.63
8	.31

Multiple correlation of Tests 3 and 6 and criterion:

Group a..........	.54
Group b..........	.49

5. RELIABILITY: Group a: 1st and 3rd weeks' production correlated with 2nd and 4th weeks' production: .87; corrected by Spearman-Brown formula: .93.

252C

BELLOWS, R. M.: Studies of clerical workers. Chap. VIII in W. H. Stead, C. L. Shartle *et al.: Occupational counseling techniques.* New York: American Book Company, 1940. ix + 273, p. 147.

1. SUBJECTS: (a) 26 ten-key adding machine operators, (b) 80 calculating machine operators, (c) 25 calculating machine operators.
2. TESTS: (1) O'Rourke Survey Test of Vocabulary, (2) Minnesota Vocational Test for Clerical Workers, Number Series, (3) Minnesota Vocational Test for Clerical Workers, Name Series, (4) MacQuarrie Test for Mechanical Ability, Tracing, (5) MacQuarrie Test for Mechanical Ability, Tapping, (6) MacQuarrie Test for Mechanical Ability, Dotting, (7) MacQuarrie Test for Mechanical Ability, Copying, (8) MacQuarrie Test for Mechanical Ability, Location, (9) MacQuarrie Test for Mechanical Ability, Blocks, (10) MacQuarrie Test for Mechanical Ability, Pursuit, (11) Taylor Number Test, Number Finding, (12) Worker-analysis Section Pencil and Paper Tapping, (13) Worker-analysis Section Paper and Pencil Dotting, (14) Worker-analysis Section Sentence Completion, (15) Worker-analysis Section Letter-Digit Substitution, (16) Worker-analysis Section Number Writing, (17) Worker-analysis Section Arithmetic.

3. CRITERION: work samples.
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION		
	GROUP a	GROUP b	GROUP c
1	−.08	.35	.38
2	.51	.34	.28
3	.37	.38	.31
4	.38	.41	—
5	.29	.12	—
6	.18	.07	—
7	.06	.37	—
8	.31	.32	—
9	.06	.38	—
10	.12	.46	—
11	.32	.34	.40
12	—	—	.01
13	—	—	.09
14	.09	.22	—
15	.21	.46	.08
16	.00	.24	.49
17	—	.43	.42

Multiple correlation of Tests 15, 10, 7, 4, 6, 17, 1, and 14 and criterion for Group b: .69.

Multiple correlation of Tests 2, 3, 4, 7, and 10 and criterion: Group a: .45; Group b: .59.

5. RELIABILITY: not given.

252d

BELLOWS, R. M.: Studies of clerical workers. Chap. VIII in W. H. Stead, C. L. Shartle *et al.*: *Occupational counseling techniques.* New York: American Book Company, 1940. ix + 273, pp. 147–149.

1. SUBJECTS: 52 bookkeeping machine operators.
2. TESTS: (1) O'Rourke Survey Test of Vocabulary, (2) Minnesota Vocational Test for Clerical Workers, Number Series, (3) Minnesota Voca-

tional Test for Clerical Workers, Name Series, (4) Taylor Number Test, Number Finding, (5) Worker-analysis Section Paper and Pencil Tapping, (6) Worker-analysis Section Paper and Pencil Dotting, (7) Worker-analysis Section Cancellation, (8) Worker-analysis Section Letter-Digit Substitution, (9) Worker-analysis Section Number Writing, (10) Worker-analysis Section Arithmetic.

3. CRITERION: per cent efficiency scores computed from errors (time interval not given).
4. VALIDITY: correlation of test and criterion:

TEST	CORRELATION
1	−.07
2	−.09
3	.19
4	.14
5	−.21
6	−.17
7	−.28
8	−.14
9	.05
10	.20

Multiple correlation of Tests 3, 8, 7, 10, and 5 and criterion: .45.

5. RELIABILITY: not given.

252e

BELLOWS, R. M.: Studies of clerical workers. Chap. VIII in W. H. Stead, C. L. Shartle *et al.: Occupational counseling techniques.* New York: American Book Company, 1940. ix + 273, pp. 151–152.

1. SUBJECTS: 62 hand transcribers.
2. TESTS: (1) O'Rourke Survey Test of Vocabulary, (2) Minnesota Vocational Test for Clerical Workers, Number Series, (3) Minnesota Vocational Test for Clerical Workers, Name Series, (4) Taylor Number Test, Number Finding, (5) Worker-analysis Section Pencil and Paper Tapping, (6) Worker-analysis Section Pencil and Paper Dotting, (7) Worker-analysis Section Cancellation, (8) Worker-analysis Section

Sentence Completion, (9) Worker-analysis Section Letter-Digit Substitution, (10) Worker-analysis Section Number Writing.

3. CRITERION: production record (number of cards per hour).
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	.31
2	.20
3	.34
4	.08
5	.09
6	.22
7	.13
8	.36
9	.15
10	.24

Multiple correlation of scores on Tests 8, 3, 4, and 6 and criterion: .51.

5. RELIABILITY: not given.

252f

BELLOWS, R. M.: Studies of clerical workers. Chap. VIII in W. H. Stead, C. L. Shartle *et al.: Occupational counseling techniques*. New York: American Book Company, 1940. ix + 273, pp. 152–154.

1. SUBJECTS: 8 groups of clerical workers: (a) 26 adding machine operators, (b) 52 bookkeeping machine operators, (c) 80 calculating machine operators, (d) 121 card-punch machine operators, (e) 98 coding clerks, I, (f) 42 coding clerks, II, (g) 62 hand transcribers.
2. TESTS: final battery: (1) Minnesota Vocational Test for Clerical Workers, Number Series, (2) Minnesota Vocational Test for Clerical Workers, Name Series, (3) Worker-analysis Section Number Writing, (4) Worker-analysis Section Arithmetic, (5) Worker-analysis Section Letter-Digit Substitution.
3. CRITERION: either production records or work samples depending on the particular sample.
4. VALIDITY: correlation of battery scores and criterion for each group:

GROUP	CORRELATION
a	.50
b	.12
c	.46
d	.39
e	.48
f	.39
g	.20

5. RELIABILITY: not given.

252g

Bellows, R. M.: Studies of clerical workers. Chap. VIII in W. H. Stead, C. L. Shartle *et al.: Occupational counseling techniques.* New York: American Book Company, 1940. ix + 273, pp. 146–147.

1. SUBJECTS: 80 calculating machine operators.
2. TESTS: final battery: (1) Worker-analysis Section Letter-Digit Substitution, (2) MacQuarrie Test for Mechanical Ability: Pursuit, Copying, Tracing, and Dotting, (3) Worker-analysis Section Arithmetic, (4) O'Rourke Survey Test of Vocabulary, (5) Worker-analysis Section Sentence Completion.
3. CRITERION: 2 forms of calculating machine work samples.
4. VALIDITY: multiple correlation of battery scores and criterion: .69.
5. RELIABILITY: not given.

253

Blum, M. L.: A contribution to manual aptitude measurement in industry: the value of certain dexterity measures for the selection of workers in a watch factory. *Journal of Applied Psychology*, 1940, 24: 381–416.

1. SUBJECTS: 119 workers in a watch factory, women (presumably assemblers).
2. TESTS: (1) O'Connor Finger Dexterity Test, (2) O'Connor Tweezer Dexterity Test.
3. CRITERION: foremen's ratings, salary ratio.

4. VALIDITY: correlations and coefficients of contingency between tests and criteria; comparison of salary ratios for groups who passed and those who failed tests:

   Correlation of quality ratings, Test 1, and salary ratio: .17.

   Correlation of quality ratings, Test 2, and salary ratio: .15.

   Contingency coefficient, quality rating, Test 1, and foreman's rating: .50.

   Contingency coefficient, quality rating, Test 2, and foreman's rating: .24.

GROUP	*N*	AVERAGE SALARY RATIO	CRITICAL RATIO
Passed both tests	46	91.1	5.0
Failed one or both tests	31	73	

   (There was no reliable difference when foremen's ratings were used as the criterion.)

5. RELIABILITY: reliability of foremen's ratings: .6 ± .09.

254

DODGE, A. F.: What are the personality traits of the successful clerical worker? *Journal of Applied Psychology*, 1940, 24: 576–586.

1. SUBJECTS: 192 clerical workers, women, 4 organizations.
2. TESTS: a personality inventory.
3. CRITERION: ratings based on quantity of work; one company had production records.
4. VALIDITY: list of traits which differentiate between better and poorer workers, with critical ratios:

TRAITS OF SUCCESSFUL GROUP	NUMBER OF ITEMS	AVERAGE OF CRITICAL RATIOS
Is not moody, does not worry	7	2.2
Even-tempered	7	1.6
Lacks self-sufficiency	9	1.9
Unwilling to accept responsibility	5	2.4
Nonsocial	5	1.5
Does not crave admiration	2	2.2

5. RELIABILITY: not given.

255

DVORAK, B. J.: Selection and construction of test items. Chap. VI in W. H. Stead, C. L. Shartle *et al.*: *Occupational counseling techniques.* New York: American Book Company, 1940. ix + 273, pp. 102–103.

1. SUBJECTS: (a) 59 single- and double-needle power sewing-machine operators, (b) 23 power sewing-machine operators (type not specified).
2. TESTS: (1) Minnesota Vocational Test for Clerical Workers, Number Series, (2) Revised Minnesota Paper Formboard, (3) MacQuarrie Test for Mechanical Ability: Tracing, Tapping, Dotting, Copying, Location, Blocks, and Pursuit.
3. CRITERION: per cent efficiency (ratio of earned hours to clock hours).
4. VALIDITY: correlation of battery and criterion:

Group a.......... .66 for single-needle operators (*N* not specified)
Group b.......... .56 for double-needle operators (*N* not specified)

5. RELIABILITY: not given.

256

HARRELL, W.: A factor analysis of mechanical ability tests. *Psychometrika*, 1940, 5: 17–33.

1. SUBJECTS: 91 cotton mill fixers.
2. TESTS: (1) age, (2) schooling, (3) experience, (4) Minnesota Spatial Relations Test, Errors, (5) Minnesota Spatial Relations Test, Time, (6) Minnesota Mechanical Assembly Test, (7) Minnesota Paper Formboard, (8) Strong Vocational Interest Blank, (9) Minnesota Mechanical Assembly Test, Routine Assembly, (10) Minnesota Mechanical Assembly Test, Routine Stripping, (11) Whitman Pinboard, preferred hand, (12) Whitman Pinboard, nonpreferred hand, (13) Whitman Pinboard, both hands, (14) Whitman Pegboard, (15) Whitman Disassembling Nuts and Bolts, (16) Whitman Assembling Nuts and Bolts, (17) Whitman Peg Sorting, (18) O'Connor Wiggly Blocks, (19) Crockett Manual Ability Test: Screwing Nuts on Bolts, (20) Crockett Manual, Ability Test: Packing Blocks, (21) Crockett Manual Ability Test:

Laying Blocks Along a Strip, (22) MacQuarrie Test for Mechanical Ability: Tracing, (23) MacQuarrie Test for Mechanical Ability: Tapping, (24) MacQuarrie Test for Mechanical Ability: Dotting, (25) MacQuarrie Test for Mechanical Ability: Copying, (26) MacQuarrie Test for Mechanical Ability: Location, (27) MacQuarrie Test for Mechanical Ability: Blocks, (28) MacQuarrie Test for Mechanical Ability: Pursuit, (29) Stenquist Mechanical Assembly Test, (30) Thurstone Spatial Relations Test, Lozenges A, (31) Thurstone Spatial Relations Test, Lozenges B, (32) a punched holes test, (33) an opposites test, (34) an analogies test, (35) a completion test.

3. CRITERION: (1) general rating of job success, (2) rating on mechanical ability, by superiors.

4. VALIDITY: correlation (product moment) of test scores and criteria:

TEST	CRITERION 1	CRITERION 2	TEST	CRITERION 1	CRITERION 2
1	.11	.28	19	.01	.06
2	.04	−.14	20	−.08	−.05
3	.20	.24	21	−.04	−.01
4	.01	.06	22	−.07	−.12
5	−.02	.12	23	−.03	.05
6	−.01	.03	24	−.03	.02
7	−.14	−.07	25	−.05	.10
8	−.13	−.18	26	−.14	−.03
9	.00	.01	27	−.02	−.06
10	−.07	−.03	28	.00	.02
11	−.02	.07	29	.02	.07
12	.12	.13	30	−.08	.17
13	−.05	−.13	31	−.05	.12
14	−.10	−.11	32	−.12	.08
15	.04	.16	33	−.03	.04
16	.14	.11	34	−.10	−.05
17	.00	.04	35	.00	.02
18	.15	.05			

Signs have been changed in Tests 1, 3, 4, 5, 9, 10, 18, and between criteria.

5. RELIABILITY: not given, except correlation of the 2 criteria: .44.

257

HARRELL, T. W.: Testing the abilities of textile workers. Georgia School of Technology, *State Engineering Experiment Station Bulletin*, 1940, 2 (2). Pp. 14.

1. SUBJECTS: two groups: (a) 41 supervisors; (b) sewing-machine operators: 32 twelve-needle machine operators, 20 one-needle machine operators.
2. TESTS: Group a: Otis Self-administering Test of Mental Ability. Group b: MacQuarrie Test for Mechanical Ability, Otis Self-administering Test of Mental Ability, Digit-Symbol Test (Stoelting Co.), 4A (a spatial relations test constructed especially for this study).
3. CRITERION: Group a: ratings by superiors. Group b: production records.
4. VALIDITY: Group a: coefficient of determination between ratings and I.Q.: .14.

   Group b: coefficient of determination between production records and scores on MacQuarrie: Pursuit and Tapping, Otis, 4A, and Digit-Symbol: .49. Coefficient of determination between production records and scores on MacQuarrie: Pursuit and Tapping: .55.
5. RELIABILITY: not given.

258

HARRELL, W.: Testing cotton mill supervisors. *Journal of Applied Psychology*, 1940, 24: 31–35.

1. SUBJECTS: 42 cotton mill supervisors.
2. TESTS: (1) Bernreuter Personality Inventory, (2) Otis Self-administering Test of Mental Ability, higher form, (3) Moss, Hunt and Omwake Test of Social Intelligence, (4) Strong Vocational Interest Blank.
3. CRITERION: ratings by superiors on a 5-point scale.
4. VALIDITY: tetracnoric correlations between composite ratings and test scores:

	TEST 3	TEST 2	TEST 1 (self-confidence)	TEST 1 (sociability)
Correlation	.18	.37	.15	.09

The supervisors showed interests similar to Boy Scoutmasters, policemen, office clerks, and accountants.

5. RELIABILITY: correlation between ratings by 2 different men for 24 supervisors: .37.

259

HOLLIDAY, F.: An investigation into the selection of apprentices for the engineering industry. *Occupational Psychology*, 1940, 14: 69–81.

1. SUBJECTS: 2 groups: (a) 41 trade apprentices, (b) 30 engineer apprentices (similar to our American machinists; some draughtsmen, etc.).
2. TESTS: (1) N.I.I.P. Intelligence Test, (2) Cox Mechanical Models, (3) Vincent Mechanical Models, (4) N.I.I.P. Form Relations Tests, (5) N.I.I.P. Space Perception Test, (6) N.I.I.P. Squares Tests, (7) N.I.I.P. Figure Construction Test, (8) N.I.I.P. Recognition of Designs Test, (9) N.I.I.P. Lines Test.
3. CRITERION: rating by supervisor on a 5-point scale for "apprentice ability."
4. VALIDITY: test scores converted to a 5-point scale and compared with criterion:

   Group a: tests 2 to 9 only; in only 5 cases was there a difference of more than one point between the test scale and the criterion scale.

   Group b: total battery; in only 4 cases was there a difference of more than one point between the test scale and the criterion scale; if use Tests 2 to 9 only, in 6 cases was there a difference of more than one point.
5. RELIABILITY: not given. Reliability of the N.I.I.P. Intelligence Test (test-retest, 7 months, $N = 9$): .95.

260

JOHNSON, A. P.: A study of one company's criteria for selecting college graduates. *Journal of Applied Psychology*, 1940, 24: 253–264.

1. SUBJECTS: 23 applicants who were hired by a national merchandising firm; personal selling, later advertising, etc.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, higher form, 20 minutes, (2) O'Connor English Vocabulary, Work sample 95, Form AB, (3) rating on family background, (4) rating on hard work or industriousness, (5) rating on extroversion-introversion, (6) rating on flair for writing.
3. CRITERION: merit ratings on the job.
4. VALIDITY: correlation of test scores and merit ratings:

TEST	CORRELATION
1	.27 ± .14
2	.17 ± .14
3	.40 ± .12
4	−.15 ± .14
5	−.22 ± .12
6	.09 ± .14

5. RELIABILITY: not given for merit ratings. Reliability of tests:

1	.92
2	.95
3	.86
4	.87
5	.82
6	.87

261

MATHEWS, L. H.: An item analysis of measures of teaching ability. *Journal of Educational Research*, 1939–40, 33: 576–580.

1. SUBJECTS: 57 teachers, 1-room rural schools.
2. TESTS: (1) American Council on Education Psychological Examination, 1936 Edition, (2) Teachers College Psychological Examination, 1934 Edition, (3) American Council on Education Civics and Government

Test, Form B, (4) Morris Trait Index L, (5) Torgerson Test of Teacher-Pupil Relationships (mimeographed form), (6) Bernreuter Personality Inventory, (7) Washburne Social Adjustment Inventory (Sapich Edition), (8) John Dewey Society Test of Social Attitudes of Secondary School Teachers, (9) Lewerenz-Steinmetz Orientation Test concerning Fundamental Aims of Education, (10) Yeager Scale for Measuring Attitudes Towards Teachers and the Teaching Profession, (11) Wrightstone Scale of Civic Beliefs.

3. CRITERION: pupil change in 7th and 8th grade pupils on a number of tests.
4. VALIDITY: item analysis by Upper-Lower Thirds method showed the following percentages of significantly discriminating items for each test:

TEST	PER CENT OF SIGNIFICANTLY DISCRIMINATING ITEMS
1	3.9
2	1.0
3	4.5
4	0.9
5	2.9
6	11.6
7	4.2
8	5.8
9	0.0
10	11.1
11	5.6

68 out of 1,675 items possessed significant discriminating power. (It is not clear whether any of those items listed under "negative discrimination" were statistically significant.)

5. RELIABILITY: not given.

262

OTIS, J. L., ENDLER, O. L., and KOLBE, L. E.: Data-analysis methods. Chap. VII in W. H. Stead, C. L. Shartle *et al.*: *Occupational counseling techniques*. New York: American Book Company, 1940. ix + 273, pp. 113–136.

1. SUBJECTS: department-store salespersons: (a) 109, (b) 153, (c) 235, (d) 30.

2. TESTS: (1) Worker-analysis Section Sentence Completion, (2) Minnesota Vocational Test for Clerical Workers, Number Series, (3) Minnesota Vocational Test for Clerical Workers, Name Series, (4) Worker-analysis Section Number Writing, (5) O'Rourke Survey Test of Vocabulary, (6) Worker-analysis Section Arithmetic, (7) Taylor Number Test, (8) Worker-analysis Section Interest Test, (9) Worker-analysis Section Personality Test, (10) Worker-analysis Section Personal Data.
3. CRITERION: composite criterion based on gross sales, returns, number of sales and quota.
4. VALIDITY: correlation of test scores with composite criterion:

TEST	GROUP a	GROUP b	GROUP c
1	−.18	−.09	−.11
2	−.17	−.12	—
3	−.16	−.14	—
4	−.10	−.07	—
5	−.10	.01	−.17
6	−.12	−.12	—
7	−.05	−.14	−.05
8	.34	.47	.44
9	.35	.32	.34
10	.29	.19	.23

Final battery composed of 66 interest items, 10 personal data items, and 21 personality items gave a multiple correlation coefficient of .40.

In a follow-up study (Group d) it was found that in 24 cases there was satisfactory agreement between criterion score (gross sales per hour) and final battery score, in 2 cases fair agreement, in 4 cases no agreement.

5. RELIABILITY:

CRITERION	CORRELATION BETWEEN 1ST HALF YEAR'S AND 2ND HALF YEAR'S DATA
1. Gross sales per day	.88
2. Ratio: salary to net sales	.83
3. Net sales per day	.87
4. Number sales per day	.89
5. Returns per day	.75
6. Actual quota per day	.83

263

Quednau, H.: Eignungsprüfung für Lochkartenpersonal. *Industrielle Psychotechnik*, 1940, 17: 130–164.

1. subjects: 34 Hollerith operators.
2. tests: (1) general intelligence (Bobertag-Fragebogen T-16), (2) Moede's sorting box, (3) copying numbers from a moving strip.
3. criterion: Criterion I: judgments by superiors, translated into number scores by author. Criterion II: a job sample.
4. validity: correlation between criterion and a total aptitude test score:

   Criterion I: $r = .86 \pm .03$
   Criterion II: $r = .82 \pm .04$
5. reliability: correlation between scores on job sample and judgment of superiors: $r = .88 \pm .03$.

264

Schultz, R. S.: Personnel selection in aviation industry. *Personnel Journal*, 1940–41, 19: 99–105.

1. subjects: 107 machine shop employees, aviation industry.
2. tests: (1) mental alertness, (2) observation, (3) technical ability, (4) technical judgment, (5) mathematical ability, (6) scientific ability, (7) trade information, (8) blueprint reading, (9) mechanical drawing, (10) measurement ability, (11) mechanical skill, (12) hand dexterity, (13) tool dexterity, (14) machine skill, (15) personality, (16) interests. Exact tests not specified.
3. criterion: rating by foreman, 4-point scale.
4. validity: per cent satisfactory in rating on machine and mechanical ability tests (not further specified) for each category of foreman's rating:

FOREMAN'S RATING	*N*	RATING ON MACHINE AND MECHANICAL ABILITY TESTS	
		SATISFACTORY	UNSATISFACTORY
First-class machinist	17	88%	12%
Semiskilled machinist	50	88	12
Bench hands	31	42	58
Unskilled	9	33	64

Of employees selected by test ($N = 27$) 93 per cent doing good or average work.

Comparison of experienced and inexperienced men:

GROUP	*N*	PER CENT RATED SATISFACTORY BY TESTS WHO ARE ALSO RATED SATISFACTORY BY FOREMAN
More than 3 years' machine or mechanical experience	40	87
Less than 1 year's machine shop experience	34	79

5. RELIABILITY: not given.

265

SHANNON, J. R.: A comparison of highly successful teachers, failing teachers, and average teachers at the time of their graduation from Indiana State Teachers College. *Educational Administration and Supervision*, 1940, 26: 43–51.

1. SUBJECTS: teachers from 31 graduating classes of Indiana State Teachers College: 111 successful, 111 average, and 37 failures (male and female).
2. TESTS: (1) college scholarship, (2) intelligence (test not specified and available only for 1926 to 1934), (3) number of extracurricular participations.
3. CRITERION: success in the field after at least 5 years of experience, as judged by author and the alumni secretary.
4. VALIDITY: critical ratios of differences between the criterion groups for each of the 3 "tests":

GROUP	SCHOLARSHIP		INTELLIGENCE	NUMBER OF EXTRACURRICULAR PARTICIPATIONS
	1898–1925	1926–1934		
Successful and average	6.23	8.16	2.24	2.56
Successful and failing	6.65	6.43	0.76	4.53
Average and failing	3.19	2.27	1.63	2.31

5. RELIABILITY: not given.

266

STEWARD, V.: The development of a selection system for salesmen. *Personnel*, 1939–40, 16: 124–136.

1. SUBJECTS: 119 life underwriters (full-time agents, at least 1 year's experience).
2. TESTS: Steward Composite Inventory and Examination: (1) Otis Self-administering Test of Mental Ability, Short Form, (2) Modified Bernreuter Personality Inventory, (3) General Knowledge Examination, (4) Vocational Interest in Selling Inventory, (5) Personal Trait Illustrations Inventory, (6) Personal History, (7) Rating Form for Employers.
3. CRITERION: earnings for previous year.
4. VALIDITY: comparison of total test scores with earnings:

TEST SCORES	EARNINGS				AVERAGE FOR GROUP
	LESS THAN $1,200	$1,200 TO $2,399	$2,400 TO $5,999	$6,000 AND UP	
81–100		2	4	6	$6,176
71–80	2	3	21	7	4,548
61–70	6	10	15	1	2,685
51–60	4	8	3	2	2,278
41–50	8	8	2		1,308
31–40	5				733
30 and under	2				299

5. RELIABILITY: not given.

267

STEWART, M. L.: A study of success and failure in eleven years of teacher training. *Educational Administration and Supervision*, 1940, 26: 372–378.

1. SUBJECTS: rural teachers in Wisconsin, *N* varies and is not always clear; maximum of 354.
2. TESTS: (1) student-teaching grades, (2) extracurricular activities (success), (3) college scholarship, (4) high school rank on state cooperative testing program, (5) high school class rank.
3. CRITERION: rating by county superintendent (probably 6-point scale).
4. VALIDITY: correlation (product moment) of test scores and criterion:

TEST	*N*	CORRELATION
1	354(?)	.21
2	145	.24
3	193	.22
4	71	.26
5	354(?)	.33

5. RELIABILITY: not given.

268

BEESON, R. W.: Interviewing and testing applicants for positions. *NOMA Forum*, 1941, 16 (4): 11–21.

1. SUBJECTS: 200 employees of a life insurance company (mostly clerical but types probably mixed).
2. TESTS: L.O.M.A. Test I ("mental alertness"). Not clear when given or whether hired by test.
3. CRITERION: job level reached after 5 to 10 years. Job levels: (1) simple clerical work; (2) complicated clerical work, Group 1, (3) complicated clerical work, Group 2, (4) decision-making jobs.
4. VALIDITY: comparison of per cent at each job level for each test score group:

JOB LEVEL	TEST SCORES						
	0–69	70–89	90–109	110–129	130–149	150–169	170 UP
4	0%	10%	10%	17%	38%	61%	83%
3	6	6	26	32	41	28	17
2	25	45	41	26	16	11	0
1	69	39	23	25	5	0	0
Total *N*	16	31	39	47	37	18	12

5. RELIABILITY: not given.

269

BILLS, M. A.: Selection of casualty and life insurance agents. *Journal of Applied Psychology*, 1941, 25: 6–10.

1. SUBJECTS: 2 groups: (a) 700 casualty insurance salesmen, (b) 70 life insurance salesmen.

2. TESTS: (1) Strong Vocational Interest Blank: life insurance and real estate sales keys, (2) Bernreuter Personality Inventory, (3) a personal history blank, (4) Strong Vocational Interest Blank: purchasing agent, lawyer, and clerk keys.

3. CRITERION: Group a: rating by manager. Group b: rating by production.

4. VALIDITY: Group a: comparison of rating with combined scores on 1 and 3:

Age: under 25 (approximately ⅓ of total group): chances of success are 3.3 times as great with high as with low scores.

Age: 25 to 29 (approximately ⅓ of total group): chances of success are 2.4 times as great with high as with low scores.

Age: over 30 (approximately ⅓ of total group): chances for success are 2.3 times as great with high as with low scores.

Comparison of rating with scores on 1, 3, and 4 for group under 25: the percentage of failures increases as the score decreases, five categories, high to low scores: 25 per cent, 33 per cent, 40 per cent, 63 per cent, 78 per cent.

Group b: comparison of production and scores on 1 and 3: average production for those making high to low scores: $51,000, $43,000, $33,000, $28,000.

5. RELIABILITY: not given.

270

BLUM, M., and CANDEE, B.: The selection of department store packers and wrappers with the aid of certain psychological tests. *Journal of Applied Psychology*, 1941, 25: 76–85.

1. SUBJECTS: 2 groups: (a) 36 packers and wrappers in a department store, permanent employees, (b) 52 packers, wrappers, and relief cashiers, seasonal employees.
2. TESTS: (1) O'Connor Finger Dexterity, (2) Minnesota Rate of Manipulation Test: Placing, (3) Minnesota Rate of Manipulation Test: Turning.
3. CRITERION: production record.
4. VALIDITY: correlation between criterion and test scores:

GROUP	TEST 1	TEST 2	TEST 3
a	.08	.21	.06
b	.02	.35	.27

Multiple correlation between criterion and all three tests:

Group a..........	.24
Group b..........	.38

5. RELIABILITY: correlation of average production for the first half of December and the second half of December: .88.

271

BLUM, M. L., and CANDEE, B.: The selection of department store packers and wrappers with the aid of certain psychological tests: II. *Journal of Applied Psychology*, 1941, 25: 291–299.

1. SUBJECTS: 2 groups: (a) 55 packers and wrappers, permanent employees, (b) 317 packers and wrappers, seasonal employees.

2. TESTS: (1) O'Connor Finger Dexterity, (2) Minnesota Rate of Manipulation Test: Placing, (3) Otis Self-administering Test of Mental Ability, (4) Minnesota Vocational Test for Clerical Workers.
3. CRITERION: production records; foremen's ratings on a 5-point scale, A to C.
4. VALIDITY: correlation of production records and test scores: Group a: only two are reliable:

   Packers: Test 4 (Number Series) = .57 ± .12 ($N = 16$)
   Wrappers: Test 4 (Name Series) = .65 ± .14 ($N = 39$)

   Group b: only one is reliable:

   Packers: Test 2: .37 ± .09 ($N = 112$)

   Differences between test scores for the five foremen's-rating groups: Group a: none are reliable. Group b: the only reliable difference is on Test 4, for males, between A and C ratings ($N = 6$ and 11):

   Critical ratio, Test 4 (Number Series) = 3.4
   Critical ratio, Test 4 (Name Series) = 2.1
5. RELIABILITY: not given.

272

COOK, D. W.: *Psychological tests for unskilled jobs.* New York: American Management Association, Personnel Series No. 50, 1941, 18–29.

1. SUBJECTS: (a) 113 coil winders, (b) 100 electrical testers and inspectors (Western Electric Company).
2. TESTS: Group a: a coil-winding test. Group b: a test of perception.
3. CRITERION: Group a: high versus low earning groups. Group b: above or below average in efficiency on the job (method of classification not reported).
4. VALIDITY:

Group a

	CRITICAL SCORE: 5 MIN., 10 SEC.	
	PER CENT FAILING TEST	PER CENT PASSING TEST
High earning group	8	92
Low earning group	72	28

Group b

	NUMBER OF ERRORS			
	1–6	7–12	13–18	19 AND UP
Above average efficiency	100%	76%	17%	0%
Below average efficiency	0	24	83	100

5. RELIABILITY: not given.

273

CRISSEY, O. L.: A study of tests predictive of success in the occupation of job setter. Abstract in *Psychological Bulletin*, 1941, 38: 720.

1. SUBJECTS: 29 job setters in the automotive industry.
2. TESTS: 10 tests consisting of 25 predictors, not specified.
3. CRITERION: rating by supervisors.
4. VALIDITY: 5 tests (not specified) gave a multiple correlation of .66 with the criterion (Wherry-Doolittle technique). Presumably same tests as those used later with a larger group: (1) Minnesota Spatial Relations Test, (2) Crissey Dexterity Test A, (3) Crissey Dexterity Test B, (4) and (5) "two additional procedures" on Tests 2 and 3.
5. RELIABILITY: not given.

274

FLANAGAN, J. C.: A preliminary study of the validity of the 1940 edition of the National Teacher Examinations. *School and Society*, 1941, 54: 59–64.

1. SUBJECTS: 49 teachers in 22 school systems (selected from among those taking National Teacher Examinations in 1940, who were regularly employed then, and where there were at least 2 teachers in same school systems whose scores on the common examinations differed by 100 or more points).
2. TESTS: National Teacher Examinations, 1940, Common Examinations.
3. CRITERION: (1) ratings on 50 items by at least 2 supervisors, (2) reports by at least 5 students in teacher's course of previous year.
4. VALIDITY: correlation (product moment) of test scores and ratings:
   Criterion 1: correlation of total score and ratings of over-all judgment

of teacher's general effectiveness and desirability: .51. Ratings on: (1) reasoning and problem-solving ability, (2) judgment and perspective in making decisions and choices, (3) breadth of cultural education as reflected in conversation and general teaching, (4) understanding of current social problems, (5) ability to offer wise guidance on the basis of sound individual and group analysis and knowledge of opportunities: all correlated about .50 with total score in common examinations. All 50 correlations with total score were positive.

Criterion 2: comparison of per cent of teachers mentioned in student reports for various test scores: (1) Which teachers seemed to have a broad knowledge of other subjects besides the one you had with them? Those scoring below 600 ($N = 30$): 30 per cent; those scoring above 700 ($N = 22$): 49 per cent. (2) Which of your teachers had the most pleasing personality? Those scoring below average: 24 per cent; those attaining superior scores: 39 per cent. (3) Which teachers were most clear in presenting their ideas? Those scoring below average on English Expression Test: 35 per cent; those attaining superior scores on English Expression Test: 51 per cent.

5. RELIABILITY: not given.

275

HAMPTON, P.: A comparative study of certain personality traits and success in retail selling. *Journal of Applied Psychology*, 1941, 25: 431–446.

1. SUBJECTS: 70 independent retail grocers, Canada.
2. TESTS: Bernreuter Personality Inventory.
3. CRITERION: credit rating and rating of pecuniary strength, Dun and Bradstreet.
4. VALIDITY: correlation of criteria and score on the various scales of the test:

SCALE	PECUNIARY STRENGTH	CREDIT RATING
Neurotic tendency	−.08 ± .08	−.01 ± .08
Self-sufficiency	.15 ± .08	.14 ± .08
Introversion-Extroversion	−.05 ± .08	−.01 ± .08
Dominance-Submission	.16 ± .08	.14 ± .08
Confidence	.07 ± .08	−.02 ± .08
Sociability	−.15 ± .08	−.10 ± .08

An experimental scoring key, based on the responses of the best and poorest grocers, gave the following results when used on the remainder of the group, excluding those from whom the scale was derived: correlation between score and pecuniary strength: .19 ± .11.

5. RELIABILITY: not given.

276

HAY, E. N.: *Experience with tests in the Pennsylvania Company*. National Industrial Conference Board, Studies in Personnel Policy No. 32, 1941, 56–58.

1. SUBJECTS: 24 messenger boys (to be promotable to clerical and supervisory jobs; few hired who scored less than 36 on Otis Test).
2. TESTS: (1) Otis Self-administering Test of Mental Ability, 20-minute, (2) O'Connor Vocabulary Test.
3. CRITERION: rating by supervisor.
4. VALIDITY: comparison of test scores for 3 efficiency groups:

TEST	GROUP		
	BEST	AVERAGE	LEAST GOOD (BUT STILL ACCEPTABLE)
1	48.6	47.4	36.4
2	111	108	85
Total *N*	9	8	7

5. RELIABILITY: not given.

277

HAY, E. N.: Tests in industry. II: Practical illustration. *Personnel Journal*, 1941–42, 20: 10–15. (Also reported in National Industrial Conference Board, Studies in Personnel Policy No. 32, 1941, 56–58.)

1. SUBJECTS: 40 machine bookkeepers (apparently the total *N* employed by this company in this department, *i.e.*, no selection of S's available).

2. TESTS: (1) Otis Self-administering Test of Mental Ability, Form B, (2) Minnesota Vocational Test for Clerical Workers: Number Series, (3) Minnesota Vocational Test for Clerical Workers: Name Series, (4) Healy Tapping Test, (5) Taylor Number Test, (6) Turner Coordination Test.

3. CRITERION: production records: number of debits and credits posted per hour, for period of 4 days.

4. VALIDITY: correlation of test scores and criterion:

TEST	*N*	CORRELATION
1	40	.35
2	40	.39
3	40	.45
4	34	−.16
5	34	.37
6	34	.34
Experience, months		.14

Comparison of best and poorest operators:

	BEST 20	POOREST 20
Average Production	116	103
I.Q. below 88	3	9
Test 3 net score below 130	1	12
Test 2 net score below 130	1	8

5. RELIABILITY: not given.

278

HERSEY, R. B.: *Problems in selecting and training supervisors.* New York: American Management Association, Personnel Series No. 47, 1941, 20–32. (Also reported in National Industrial Conference Board, Studies in Personnel Policy No. 32, 1941, 61–69.)

1. SUBJECTS: 503 employees of the Pennsylvania Railroad, jobs not specified.

2. TESTS: individual evaluated by means of: (1) an executive aptitude test, (2) an interview, (3) ratings by supervisors.
3. CRITERION: job status after 3 to 5 years.
4. VALIDITY:

EVALUATION	N	PROMOTED	UNCHANGED	DEMOTED
1. Fully qualified for promotion	77	56	16	5
2. Almost qualified	48	31	16	1
3. Likely candidates	20	6	13	1
4. Possible candidates	21	0	20	1
5. Not qualified	337	8	309	20

5. RELIABILITY: not given.

279

HOLLIDAY, F.: A further investigation into the selection of apprentices for the engineering industry. *Occupational Psychology*, 1941, 15: 173–184.

1. SUBJECTS: 149 trade and engineering apprentices.
2. TESTS: (1) Vincent Mechanical Models, (2) N.I.I.P. Form Relations Test, (3) N.I.I.P. Space Perception Test, (4) N.I.I.P. Figure Construction Test, (5) N.I.I.P. Squares Test.
3. CRITERION: rating by foreman on a 5-point scale.
4. VALIDITY: comparison of those above and below average on test and criterion: of 21 engineer apprentices and 25 trade apprentices rated below average, 80 per cent and 67 per cent respectively had below-average scores on test battery; of 7 engineer apprentices and 14 trade apprentices rated excellent, 70 per cent and 43 per cent respectively had above-average scores on the test battery.
5. RELIABILITY: not given, but foreman's ratings said to be very unreliable.

280

KURTZ, A. K.: Recent research in the selection of life insurance salesmen. *Journal of Applied Psychology*, 1941, 25: 11–17.

1. SUBJECTS: 2 groups: (a) 211 men over 26 years of age, hired as life insurance salesmen, tested before hiring but hired regardless of test

score; (b) 372 life insurance salesmen, a more heterogeneous group, and test score considered in hiring.

2. TESTS: Aptitude Index for Life Insurance Salesmen.
3. CRITERION: total sales during the first year and survival rate.
4. VALIDITY: comparison of Aptitude Index score and first-year sales and survival rate in terms of per cent of the average for each of 5 test groups:

TEST SCORE	PER CENT OF AVERAGE SALES AND SURVIVAL
Group a:	
A (excellent)	206
B (very good)	137
C (good)	78
D (fair)	39
E (poor)	41
Group b:	
A	233
B	116
C	69
D and E	41

5. RELIABILITY: not given.

281

OHMANN, O. A.: A report of research on the selection of salesmen at the Tremco Manufacturing Company. *Journal of Applied Psychology*, 1941, 25: 18–29. (Also reported in part in New York: American Management Association, Marketing Series No. 45, 1941, 11–17.)

1. SUBJECTS: 2 groups: (a) 48 salesmen, (b) 65 salesmen, building materials.
2. TESTS: a Personal History Blank, 13 selected items.
3. CRITERION: Group a: 1938 earnings. Group b: "failed" or "still working."
4. VALIDITY: Group a: correlation between test score and earnings: .67.

   Group b: of the original 65, 33 are still working, 32 have failed. If critical scores established with Group a had been used in hiring, only 25 of the group would have been employed; and of these, 20 are still working, 5 have failed. Forty of the group would not have been employed; and of these, 27 have failed and 13 are working, but 8 of the 13 will probably fail by the end of the year.

5. RELIABILITY: not given.

282

OTIS, J. L.: Procedures for the selection of salesmen for a detergent company. *Journal of Applied Psychology*, 1941, 25: 30–40.

1. SUBJECTS: 17 salesmen of soap and alkalies to laundries (salesmen also service laundries).
2. TESTS: (1) personal data from an applicant interview form, (2) Bernreuter Personality Inventory, (3) Strong Vocational Interest Blank, Real Estate sales and Life Insurance sales keys, (4) Bureau Test VI.
3. CRITERION: gross sales in the territory, sales cost.
4. VALIDITY: correlation between criteria and test scores (method not specified):

TEST	CRITERION	CORRELATION
1	Sales cost	.31
1	Gross sales	.37
2	Sales cost	"No relationship"
2	Gross sales	"No relationship"
3	Sales cost	.50
4		None reported

5. RELIABILITY: reliability coefficients of: total number of calls, average calls per day, miles per call, description of accounts called upon, number of calls with jobber salesman, and the amount of time spent in service were all "above .78."

283a

POND, M.: *Experience with tests in the Scovill Manufacturing Company.* National Industrial Conference Board, Studies in Personnel Policy No. 32, 1941, 45–46.

1. SUBJECTS: 147 male applicants for training in mechanical work.

2. TESTS: (1) Scovill Classification Test, (2) MacQuarrie Test for Mechanical Ability, (3) O'Connor Wiggly Block Test, combined with interview.
3. CRITERION: work history: satisfactory or unsatisfactory.
4. VALIDITY: per cent satisfactory before and after using tests:

	N	PER CENT SATISFACTORY
Before using tests	163	61
After introducing tests	147	93

5. RELIABILITY: not given.

283b

POND, M.: *Experience with tests in the Scovill Manufacturing Company.* National Industrial Conference Board, Studies in Personnel Policy No. 32, 1941, 45–46.

1. SUBJECTS: 83 apprentices in the toolmaking department.
2. TESTS: (1) Scovill Classification Test, (2) MacQuarrie Test for Mechanical Ability, (3) O'Connor Wiggly Block Test.
3. CRITERION: foremen's rankings.
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	.36
2	.32
3	.37

5. RELIABILITY: not given.

284

POND, M.: Tests for the selection of office employees. *Personnel*, 1940–41, 17: 199–208.

1. SUBJECTS: about 200 male and 200 female clerical workers, all new employees.

2. TESTS: Scovill Classification Test.
3. CRITERION: rated by supervisors (with records of promotion, etc.).
4. VALIDITY: reported only as "a steady rise in the percentage of successful workers as the scores increased," from 10 per cent of those scoring below 130 rated successful to 94 per cent of those scoring above 179.
5. RELIABILITY: not given.

285

SHARTLE, C. L.: *New selection methods for defense jobs.* New York: American Management Association, Personnel Series No. 50, 1941, 30–41.

1. SUBJECTS: 77 power sewing-machine operators.
2. TESTS: (1) USES, Occupational Analysis Section C 29 (Number Comparison), (2) USES, Occupational Analysis Section C 30 (Name Comparison), (3) MacQuarrie Test for Mechanical Ability: Dotting, Pursuit, Location, and Tapping.
3. CRITERION: work proficiency level (method of determination not specified).
4. VALIDITY: comparison of best, average, and least proficient operators in terms of per cent having low test scores on the entire battery:

Best	14%
Average.	24
Poorest	62

5. RELIABILITY: not given.

286a

SWARTZ, B. K., and SCHWAB, R. E.: *Experience with tests in the Detroit Edison Company.* National Industrial Conference Board, Studies in Personnel Policy No. 32, 1941, 49–56.

1. SUBJECTS: 48 substation operators.
2. TESTS: (1) Viteles Substation Test, Series A (adaptation of the MacQuarrie Test for Mechanical Ability), (2) Viteles Substation Test, Series B (an apparatus test).

3. CRITERION: ratings by superiors: 4-point scale, Best, Poorest, Average, and Failure.

4. VALIDITY: per cent of each group eliminated by setting of critical score:

TEST	CRITICAL SCORE	PER CENT ELIMINATED			
		FAILURES	POOREST	AVERAGE	BEST
1	41	73	62	53	22
2	46	73	77	33	67
1 and 2 combined	82	45	46	20	11
Total *N*		11	13	15	9

5. RELIABILITY: not given.

286b

SWARTZ, B. K., and SCHWAB, R. E.: *Experience with tests in the Detroit Edison Company*. National Industrial Conference Board, Studies in Personnel Policy No. 32, 1941, 49–56.

1. SUBJECTS: 39 research engineers (all types).

2. TESTS: (1) Stanford Scientific Aptitude Test, (2) Viteles Substation Test, Series A (adaptation of MacQuarrie Test of Mechanical Ability), (3) Minnesota Paper Formboard, (4) O'Connor Wiggly Block Test, (5) Army Alpha Examination, (6) Michigan Vocabulary Profile, (7) O'Connor Number-checking Worksample, (8) O'Connor Word-checking Worksample.

3. CRITERION: rating by supervisor, 6-point scale: 1 = best, 6 = poorest.

4. VALIDITY: per cent of various rated groups eliminated by setting critical scores on the 2 tests having the greatest value for selection:

TEST	CRITICAL SCORE	PER CENT ELIMINATED					
		1	2	3	4	5	6
6—scientific vocabulary	54	0	0	54	90	100	100
3	46	20	20	18	60	100	83
Total *N*		5	5	11	10	2	6

5. RELIABILITY: not given.

287

TAYLOR, E. M.: A study in the prognosis of musical talent. *Journal of Experimental Education*, 1941, 10: 1–28.

1. SUBJECTS: 93 professional musicians of various sorts (teachers, performers, radio musical directors, etc.).
2. TESTS: (1) Seashore Measures of Musical Talent, (2) Kwalwasser-Dykema Music Tests, (3) 4 tests of musical background by Taylor.
3. CRITERION: rating on the basis of questionnaires and professionals' opinions of the subjects; 5 groups.
4. VALIDITY: coefficient of contingency between tests and criterion:

TEST	*C*
1—pitch	.34
1—intensity	.37
1—time	.47
1—rhythm	.45
1—consonance	.47
1—tonal memory	.47
2—melodic sensitivity	.48
2—harmonic sensitivity	.21
2—pitch	.36
2—intensity	.46
2—time	.23
2—quality	.36
2—tonal movement	.41
2—tonal memory	.41
2—melodic taste	.47
2—rhythm discrimination	.45
2—pitch imagery	.62
2—rhythm imagery	.44
3—discrimination of mode	.52
3—discrimination of rhythm	.37
3—discrimination of mood	.41
3—recognition of themes	.21

5. RELIABILITY: not given.

288

TIFFIN, J., and ROGERS, H. B.: The selection and training of inspectors. *Personnel*, 1941–42, 18: 14–31.

1. SUBJECTS: 150 female tinplate inspectors (assorters).
2. TESTS: (1) visual discrimination, far, (2) visual discrimination, near, (3) vertical balance of eyes, (4) strength of grip, (5) Minnesota Rate of Manipulation Test, (6) reaction time, (7) Purdue Hand Precision Test. (Vision tests given stereoscopically following Well's procedure; not further identified.)
3. CRITERION: speed and accuracy scores (5) on sorting a coded stack of 150 sheets (work sample).
4. VALIDITY: correlation (product moment) between test scores and criterion scores:

TEST	CRITERION					
	SPEED	MIXED SHEETS	DEFECT 1	DEFECT 2	DEFECT 3	WEIGHT DEFECT
1	−.26	.22	.28	.16	.19	.02
2	.00	.09	.08	.13	.15	−.10
3	−.43	.03	.25	−.13	.08	.01
4	.02	.17	−.05	.19	−.07	.14
5	.01	.06	−.10	−.03	.03	.14
6	−.02	.12	.05	.10	−.07	.03
7	.05	−.13	−.06	.12	.01	.34

5. RELIABILITY: reliability of accuracy scores (method not given):

Mixed sheets	.90
Appearance defect No. 1	.86
Defect No. 2	.87
Defect No. 3	.68
Weight defect	.74

289

VITELES, M. S.: *Getting results from a program of testing for sales ability.* New York: American Management Association, Marketing Series No. 45, 1941, 18–30.

1. SUBJECTS: 59 electrical appliance salesmen (door-to-door).
2. TESTS: Humm-Wadsworth Temperament Scale.
3. CRITERION: (1) transfer from training gang to regular sales force, (2) more than 6 months' service on regular sales force.
4. VALIDITY: comparison of those considered good and poor by test in terms of their subsequent performance:

TEST SCORES	N	PER CENT TERMINATED OR RESIGNED	PER CENT EMPLOYED 6 MONTHS OR MORE
1. "Log scoring":			
Employable and valid	20	60	35
Unemployable and valid	12	59	33
2. "Combination scoring":			
Employable and valid	31	71	23
Unemployable and valid	16	50	44

5. RELIABILITY: not given.

290

WADSWORTH, G. W., JR.: *The Humm-Wadsworth Temperament Scale at Work.* National Industrial Conference Board, Studies in Personnel Policy No. 32, 1941, 58–60.

1. SUBJECTS: (a) 800 employees of a gas company, (b) 504 additional employees selected by test.
2. TESTS: Humm-Wadsworth Temperament Scale.
3. CRITERION: ratings by superior as: (1) successful and of acceptable personality or as unsatisfactory in work and personality, (2) outstanding, satisfactory, or problem employee.

4. VALIDITY: Group a: test agreed with the ratings in 77 per cent of cases. Group b: selected by test. Ratings as follows:

Outstanding	38.2%
Satisfactory	48.0
Problem	9.8

5. RELIABILITY: not given.

291

AYRES, A. W.: A comparison of certain visual factors with the efficiency of textile inspectors. *Journal of Applied Psychology*, 1942, 26: 812–827.

1. SUBJECTS: 45 inspectors of rayon yarn, females.
2. TESTS: (1) Keystone Diagnostic Series, Diagnostic Stereopsis, 30 inches, (2) Betts and Ayres Visual Sensation and Perception Tests, Stereopsis, 16 inches, (3) Betts and Ayres Visual Sensation and Perception Tests, Ametropia, 16 inches; left, right, and both eyes, (4) Snellen Chart, 20 feet; left, right, and both eyes, (5) American Optical Company, Visual Acuity, Test Type Card No. 1981, 16 inches; left, right, and both eyes, (6) Plus Lens Tolerance, 16 inches; left and right eyes, (7) American Optical Company, Beren's Rule, Accommodation; left, right, and both eyes, (8) Luckiesh and Moss Visibility Meter, Relative Visibility, 16 inches; left, right, and both eyes, (9) Keystone Visual Safety Tests, Visual Efficiency, optical infinity; left, right, and both eyes, (10) Keystone Visual Safety Tests, Eye Coordination Level, optical infinity, (11) Keystone Visual Safety Tests, Vertical Imbalance, optical infinity, (12) Keystone Visual Safety Tests, Binocular Fusion, 16 inches and optical infinity, (13) Keystone Visual Safety Tests, Lateral Imbalance, 16 inches and optical infinity, (14) Keystone Visual Safety Tests, Ametropia, optical infinity; left, right, and both eyes, (15) Color Vision, both eyes (presumably Keystone Test but not identified).
3. CRITERION: (1) incidence of failure to discover defective units, (2) average hourly production, (3) incidence of units which should not have been put aside, (4) total units set aside for foreman's decision; all criteria on the basis of a 2-week period.

4. VALIDITY: multiple correlation coefficients for the selected battery of Tests 1, 3, 5, 7 (Near Blur Point), 7 (Far Fade Point), 11, 12 (16 inches), 13 (20 feet), 7 (Far Fade Point minus Near Blur Point), and the various criteria:

CRITERION	CORRELATION
1	.88
2	.81
3	.75
4	.85

Correlation of number of tests failed and criterion:

CRITERION	CORRELATION
1	.74
2	—.50
3	.70
4	.61

(Tetrachoric correlations between test scores and criteria are given.)

5. RELIABILITY: correlation of first week's record with second week's record: Criterion 1: .73, Criterion 2: .85, Criterion 3: .83, Criterion 4: .91.

292a

BILLS, M. A. (Chairman): *The application of psychological tests to the selection, placement, and transfer of clerical employees.* New York: Life Office Management Association, Committee on Tests, Report No. 6, 1942. Pp. 28. (Processed.)

1. SUBJECTS: 200 clerical workers with at least 5 years' experience.
2. TESTS: L.O.M.A. Test 1 A (mental ability).
3. CRITERION: job level attained after 5 to 10 years' service: I: simple clerical work; II: more complicated clerical work; II^2: a still higher grade; III: decision-making jobs.
4. VALIDITY: percentage of various test score groups attaining each job level:

SCORE	0–69	70–89	90–109	110–129	130–149	150–169	170 AND UP
N	16	31	39	47	37	18	12
Job level:							
III	0%	10%	10%	17%	38%	61%	83%
II[2]	6	6	26	32	41	28	17
II	25	45	41	26	16	11	0
I	69	39	23	25	5	0	0

5. RELIABILITY: not given.

292b

BILLS, M. A. (Chairman): *The application of psychological tests to the selection, placement, and transfer of clerical employees.* New York: Life Office Management Association, Committee on Tests, Report No. 6, 1942. Pp. 28. (Processed.)

1. SUBJECTS: 113 clerical workers engaged in checking and posting.
2. TESTS: L.O.M.A. Test N (number facility, adapted from A.C.E. Primary Mental Abilities Test N).
3. CRITERION: rated above average, average, or below average on basis of points assigned in accordance with Job Element Evaluation Plan (a kind of job-level criterion).
4. VALIDITY: per cent of various test score groups in each criterion category:

RATING	TEST SCORES		
	BELOW 90	90–149	150 AND UP
Above average	0%	16%	36%
Average	14	44	46
Below average	86	40	18

5. RELIABILITY: not given.

292c

Bills, M. A. (Chairman): *The application of psychological tests to the selection, placement, and transfer of clerical employees.* New York: Life Office Management Association, Committee on Tests, Report No. 6, 1942. Pp. 28. (Processed.)

1. SUBJECTS: 33 clerical workers engaged in discussion and correspondence.
2. TESTS: L.O.M.A. Test V (verbal facility, adapted from A.C.E. Primary Mental Abilities Test V).
3. CRITERION: rated above average, average, or below average on basis of points assigned in accordance with Job Element Evaluation Plan (a kind of job-level criterion).
4. VALIDITY: per cent of various test score groups in each criterion category:

RATING	TEST SCORES		
	BELOW 78	78–112	113 AND UP
Above average	0%	33%	58%
Average	14	40	17
Below average	86	27	25

5. RELIABILITY: not given.

292d

Bills, M. A. (Chairman): *The application of psychological tests to the selection, placement, and transfer of clerical employees.* New York: Life Office Management Association, Committee on Tests, Report No. 6, 1942. Pp. 28. (Processed.)

1. SUBJECTS: 32 clerical employees engaged in machine and typing operations.
2. TESTS: L.O.M.A. Test M (memory, adapted from A.C.E. Primary Mental Abilities Test M).
3. CRITERION: rated above average, average, or below average on basis of points assigned in accordance with Job Element Evaluation Plan (a kind of job-level criterion).

4. VALIDITY: per cent of various test score groups in each criterion category:

RATING	TEST SCORES		
	BELOW 12	12–19	20 AND UP
Above average	9%	25%	56%
Average	27	25	33
Below average	64	50	11

5. RELIABILITY: not given.

293

CRISSEY, O. L.: Test predictive of success in the occupation of job setter. Abstract in *Psychological Bulletin*, 1942, 39: 436.

1. SUBJECTS: 117 job setters, automotive industry.
2. TESTS: (1) Minnesota Spatial Relations Test, (2) Crissey Dexterity Test A, (3) Crissey Dexterity Test B, (4) and (5) "two additional procedures on the Crissey Dexterity Tests."
3. CRITERION: rating by supervisors on the basis of specific reference points with regard to manual skill.
4. VALIDITY: correlation of battery scores and criterion: .59.
5. RELIABILITY: not given.

294

DODGE, A. F.: Characteristics of good clerks. *Personnel Journal*, 1941–42, 20: 324–327.

1. SUBJECTS: 192 clerical workers.
2. TESTS: a personality questionnaire.
3. CRITERION: supervisor's ratings used to divide group into better and poorer.
4. VALIDITY: comparison of groups for each question; 39 questions found which differentiated between the groups. Questions not specified, examples given: (1) "Do you prefer to assume entire responsibility in a given situation rather than share the responsibility with another?"

Answered "no" by 72 per cent of good workers, 57 per cent of poor workers. (2) "Do you find it easy to make friends?" Answered "no" by 24 per cent of good workers, 14 per cent of poor workers. (3) "Had you rather be alone when under emotional strain?" Answered "no" by 23 per cent of good workers, 11 per cent of poor workers. No data on the significance of differences.

5. RELIABILITY: not given.

295

FAY, P. J., and MIDDLETON, W. C.: Relationship between sales ability and ratings of the transcribed voices of salesmen. *Journal of Applied Psychology*, 1942, 26: 499–510.

1. SUBJECTS: 29 salespersons from a large retail store, 14 males, 15 females.
2. TESTS: ratings by 136 psychology students on: (1) enthusiasm, (2) convincingness, (3) sales ability, from recordings of the reading of 2 sales scripts by the salespersons.
3. CRITERION: classified by management into superior or inferior salespersons.
4. VALIDITY: critical ratios between superior and inferior groups for each item rated:

TRAIT	CRITICAL RATIO		
	MALES	FEMALES	TOTAL GROUP
1	9.40	10.78	15.17
2	2.67	7.10	6.50
3	4.10	5.43	6.17

5. RELIABILITY: reliability coefficients, correlation of rating on first script with rating on second script:

TRAIT	CORRELATION	
	MALES	FEMALES
1	.53	.68
2	.64	.60
3	.80	.71

296

GHISELLI, E. E.: Tests for the selection of inspector-packers. *Journal of Applied Psychology*, 1942, 26: 468–476.

1. SUBJECTS: 26 inspector-packers in a pharmaceutical house, women.
2. TESTS: (1) a pegboard, (2) Minnesota Rate of Manipulation Test: Placing, (3) Minnesota Rate of Manipulation Test: Turning, (4) MacQuarrie Test for Mechanical Ability, (5) Minnesota Paper Formboard, (6) Minnesota Vocational Test for Clerical Workers.
3. CRITERION: combined ratings of forelady and supervisor.
4. VALIDITY: correlations of criterion and tests:

TEST	CORRELATION
5	.57
1	−.50
2	−.24
3	−.40
6—Number Series..........	.29
6—Name Series............	.26
4	.19

Multiple correlation of test batteries and criterion:

Tests 5, 1: .65
Tests 5, 1, and 4 (copying): .71
Tests 5, 1, 4 (copying), and 4 (dotting): .72

5. RELIABILITY: correlation of forelady's ratings and supervisor's ratings: .72.

297

GHISELLI, E. E.: The use of the Strong Vocational Interest Blank and the Pressey Senior Classification Test in the selection of casualty insurance agents. *Journal of Applied Psychology*, 1942, 26: 793–799.

1. SUBJECTS: 29 casualty insurance agents.
2. TESTS: Strong Vocational Interest Blank, (2) Pressey Senior Classification Test.
3. CRITERION: ratings by sales manager; production.

4. VALIDITY: correlation between test scores and criteria:

TEST	RATINGS	PRODUCTION	BOTH
2	.29	.26	.32
1, CPA	.30	.35	.38
1, Life insurance	.22	−.01	.12
1, Real estate	.06	−.19	−.08
1, Occupational level	.31	.15	.27
1, Group I	.11	−.02	.05
1, Group II	.00	.17	.10
1, Group V	.11	.09	.12
1, Group VIII	.12	.00	.07
1, Group IX	.07	.05	.07
1, Group X	−.17	−.02	−.11

5. RELIABILITY: Correlation of specific ratings with all-round ratings: .85; correlation of corrected production for current and previous years: .73; correlation of sum of ratings and corrected production figures: .49.

298

GRANEY, M. R.: *The construction and standardization of the Purdue Mechanical Assembly Test.* Ph.D. thesis, Purdue University, 1942. Pp. 36 plus plates.

1. SUBJECTS: 2 groups: (a) 91 machinists from a large machine tool company, (b) 48 apprentice machinists from a large machine tool company.
2. TESTS: Purdue Mechanical Assembly Test.
3. CRITERION: Group a: industrial merit ratings. Group b: rated by 6 instructors (10 categories).
4. VALIDITY: Group a: correlation of criterion and test scores: .31; when corrected for attenuation: .51 ± .10.

   Group b: correlation of criterion and test scores: .21; when corrected for attenuation: .34 ± .13.
5. RELIABILITY: reliability of criterion for Group a (found in a previous study): .55; for Group b, estimated at .50.

Reliability of test: correlation (product moment) of Z-scores on Form A with Z-scores on Form B ($N = 388$): .77; standard error: .02.

299

HOLLIDAY, F.: A survey of an investigation into the selection of apprentices for the engineering industry. *Occupational Psychology*, 1942, 16: 1–19.

1. SUBJECTS: 28 engineering apprentices.
2. TESTS: Group Test 33 (intelligence).
3. CRITERION: promotion (upgrading to technical offices).
4. VALIDITY: comparison of those promoted with those not promoted:

GROUP	TEST PERFORMANCE					
	EXCELLENT	GOOD	AVERAGE	FAIR	POOR	TOTAL N
Promoted	6	6	4	2	0	18
Not promoted	0	1	1	2	6	10

Of those promoted, 67 per cent scored above average on the test.

Of those not promoted 80 per cent scored below average on the test.

5. RELIABILITY: not given.

300

JURGENSEN, C. E.: A test for selecting and training industrial typists. *Educational and Psychological Measurement*, 1942, 2: 409–425.

1. SUBJECTS: 77 industrial typists, 3 groups: (a) 28 typists with high job classification, (b) 39 typists with low job classification, (c) 10 typists released for inadequacy.
2. TESTS: Typing Ability Analysis (an industrial typing test).
3. CRITERION: division into groups on basis of job classification.
4. VALIDITY: Groups a and b: combined speed-accuracy score on test, biserial $r = .96$; standard error: ± .04. Critical ratio = 9.97. Groups b and c: critical ratio = 5.18.
5. RELIABILITY: reliability of criterion not given. Reliability of test (2 forms): combined speed-accuracy score = .83.

301

OBERHEIM, G. M.: The prediction of success of student assistants in college library work. *Educational and Psychological Measurement*, 1942, 2: 379–385. (Also reported in part in *Occupational Psychology*, 1942, 16: 83–86.)

1. SUBJECTS: 307 student assistants in a college library.
2. TESTS: (1) A.C.E. Psychological Examination, (2) National Institute of Industrial Psychology Clerical Test, (3) grade-point average for current quarter.
3. CRITERION: (a) rating by supervisor, (b) promotion.
4. VALIDITY: rating by supervisor correlated with test scores:

TEST	CORRELATION
1	.26
2	.39
3	.38

Multiple $R = .46$

Comparison of promoted and not-promoted groups on basis of test scores:

GROUP	N	TEST			LIBRARY RATING
		1	2	3	
Promoted	42	112.38	88.26	2.76	29.12
Not promoted	265	95.98	71.23	2.26	23.50
C.R.		4.3	5.3	4.5	5.4

5. RELIABILITY: correlations between ratings by 2 people on smaller groups: .76 and .77.

302

RUSMORE, J. T.: The R-G Pegboard Test of Finger Dexterity. *Journal of Applied Psychology*, 1942, 26: 523–529.

1. SUBJECTS: 28 inspector-packers of serologicals in a pharmaceutical firm, women.

2. TESTS: R-G Pegboard Test of Finger Dexterity.
3. CRITERION: ratings by superiors.
4. VALID TY: correlation of test score and ratings: double test (total score for two administrations of the test): .60; single test: .49.
5. RELIABILITY: reliability of test: double test: .95; single test: .90. Reliability of criterion not given.

303

RYAN, T. A., and JOHNSON, B. R.: Interest scores in the selection of salesmen and servicemen: occupational vs. ability-group scoring keys. *Journal of Applied Psychology*, 1942, 26: 543–562.

1. SUBJECTS: 2 groups: (a) 143 salesmen, (b) 386 servicemen, in a machine accounting services company.
2. TESTS: Strong Vocational Interest Blank; special scoring keys developed for "ability groups."
3. CRITERION: independent ratings by district manager and sales manager for Group a, by district manager and general manager for Group b: best, poorest, and middle groups. For Group a: primary group had at least 3 years' experience with the company; for Group b, all had been employed more than 2 years.
4. VALIDITY: critical ratios between average scores for best and poorest in primary and control groups:

Group a:
Primary group: critical ratio: 12.77
Control group: critical ratio: 3.12
Both groups: critical ratio: 14.86
Group b:
Primary group: critical ratio: 15.04
Control group: critical ratio: 4.82

5. RELIABILITY: not given.

304

THOMPSON, C. E.: Predicting success of *Encyclopædia Britannica* salesmen. Abstract in *Psychological Bulletin*, 1942, 39: 435.

1. SUBJECTS: 110 *Encyclopædia Britannica* salesmen; 100 additional as a check group.
2. TESTS: personal history data.
3. CRITERION: (1) average earnings, (2) average number of sets sold per period.
4. VALIDITY: correlation of total weighted score and criteria:

Criterion 1..........	.60 ± .04
Criterion 2..........	.54 ± .05

Prediction of production for 100 salesmen not in the original group: ⅔ of group within 1 standard error of actual production, ⅓ of group within 3 standard errors of actual production.

5. RELIABILITY: not given.

305a

TIFFIN, J.: *Industrial psychology*. New York: Prentice-Hall, Inc., 1942. xvi + 386, p. 42.

1. SUBJECTS: 100 hosiery menders.
2. TESTS: (1) Purdue Hand Precision Test, (2) O'Connor Finger Dexterity Test, (3) Hayes Pegboard.
3. CRITERION: average hourly earnings for 2 weeks, age and experience held constant.
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	.27
2	.18
3	.16
Composite score.........	.35

5. RELIABILITY: not given.

305b

TIFFIN, J.: *Industrial psychology.* New York: Prentice-Hall, Inc., 1942. xvi + 386, pp. 45–46.

1. SUBJECTS: 35 hosiery loopers.
2. TESTS: Purdue Grooved Pegboard Dexterity Test.
3. CRITERION: learning cost.
4. VALIDITY: comparison of test scores and learning cost:

LEARNING COST	TEST SCORE				
	60 OR OVER	55–59	50–54	45–49	40–44
\$15–\$24			2	2	5
\$25–\$34		1	3	3	
\$35–\$44			2		3
\$45–\$59	1			3	
\$60 or over	2	3	3	1	1

Correlation between test score and economy in learning cost: .48.

5. RELIABILITY: not given.

305c

TIFFIN, J.: *Industrial psychology.* New York: Prentice-Hall, Inc., 1942. xvi + 386, p. 74.

1. SUBJECTS: 47 paper machine operators.
2. TESTS: Bennett Test of Mechanical Comprehension.
3. CRITERION: foreman's ratings of job performance.
4. VALIDITY: correlation between test scores and foremen's ratings: .47.
5. RELIABILITY: not given.

306

BENNETT, G. K., and FEAR, R. A.: Mechanical comprehension and dexterity. *Personnel Journal*, 1943–44, 22: 12–17.

1. SUBJECTS: 66 machine tool operators.
2. TESTS: (1) Revised Army Beta Examination, (2) Bennett Mechanical Comprehension Test Form AA, (3) Two-hand Coordination Test (Wisconsin Miniature Test for the Engine Lathe), (4) Hand-Eye Coordination Test, (5) Hand Tool Dexterity Test.
3. CRITERION: supervisor's ratings, 5-point scale.
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	.37
2	.64
3	.40
4	.41
5	.46
Sum of all tests..........	.59

Multiple correlation of Tests 2 and 5 with criterion: .67: 17 per cent of those below average on Tests 2 and 5 rated good or excellent on the job; 69 per cent of those above average on Tests 2 and 5 rated good or excellent on the job.

5. RELIABILITY: not given.

307

BLUM, M. L.: Selection of sewing machine operators. *Journal of Applied Psychology*, 1943, 27: 35–40.

1. SUBJECTS: 50 operators of electric sewing machines, glove manufacturing concern, women; 25 in top quartile of earnings (piece rate), 25 in bottom quartile of earnings.
2. TESTS: (1) MacQuarrie Test for Mechanical Ability, (2) Blum Sewing Machine Tests, A and B.

3. CRITERION: production records based on piece-rate earnings; supervisor's ratings on a 5-point scale: A (best) to E (worst).
4. VALIDITY: comparison of high and low earning groups in terms of per cent eliminated by setting a critical score on the tests:

   Test 1: critical score of 60 eliminates 92 per cent of low group, 62 per cent of high group.

   Test 1 (tracing): critical score of 30 eliminates 76 per cent of low group, 40 per cent of high group.

TEST 2

CRITICAL SCORE	PERCENTAGE OF POOR GROUP ELIMINATED	PERCENTAGE OF GOOD GROUP ELIMINATED
260	20	0
240	28	4
220	56	20
200	72	28

   Correlation of test scores and piece-rate production, Test 2: Form A: −.40; Form B: −.33; both forms: −.42.

   Critical ratios of differences between mean scores for groups rated A and C by supervisors: Test 1: 1.4; Test 2: 3.0.

5. RELIABILITY: reliability of criteria not given. Reliability of test 2: total time on test A correlated with retest: .74; total time on test B correlated with retest: .82.

308

CHAMBERLAIN, S. D.: The use of aptitude tests in sales management. *Journal of Marketing*, 1943–44, 8: 159–164.

1. SUBJECTS: 15 salesmen, 3 different types, for 1 company (Kendall Mills): (a) institutional, consumer type of selling, $N = 5$, (b) merchandizing, distributive type of selling, $N = 5$, (c) industrial type of selling, $N = 5$.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) Bernreuter Personality Inventory, (3) Strong Vocational Interest Blank, (4) Social Intelligence (name not given), (5) Canfield Sales Sense.

3. CRITERION: rating on sales performance (over-all rating), presumably by sales manager.
4. VALIDITY: "comparison" of test scores and criterion showed 86 per cent (13 out of 15) agreement. (Not further elucidated.)
5. RELIABILITY: not given.

309

Dodge, A. F.: What are the personality traits of the successful teacher? *Journal of Applied Psychology*, 1943, 27: 325–337.

1. SUBJECTS: 301 teachers; 239 (best and worst) from air corps technical training school; 62 apprentice teachers in agriculture and home economics.
2. TESTS: Dodge Occupational Personality Inventory, Form S-C.
3. CRITERION: rating by supervisors.
4. VALIDITY: comparison of successful and less successful groups ($N = 168$ and 133, respectively) for 43 differentiating items:

TYPES OF ITEMS	RANGE OF DIFF./P.E.
1. Social attitude	1.4–4.3
2. Initiative and leadership	1.3–5.1
3. Freedom from fears and worries	1.9–3.2
4. High regard for opinion of others	1.6–4.2
5. Deliberateness in making decisions	1.4–1.8
6. Unclassified	1.3–3.3

5. RELIABILITY: not given.

310

Ghiselli, E. E.: The use of the Minnesota Rate of Manipulation and the O'Connor Finger Dexterity Tests in the selection of package wrappers. *Journal of Applied Psychology*, 1943, 27: 33–34.

1. SUBJECTS: 42 seasonal wrappers in a department store.
2. TESTS: (1) Minnesota Rate of Manipulation Test, (2) O'Connor Finger Dexterity Test.

3. CRITERION: ratings of quality and quantity of production by supervisors.
4. VALIDITY: correlations of test scores and total of the ratings:

TEST	CORRELATION
1—placing..........	−.10
1—turning..........	−.02
2	.02

5. RELIABILITY: correlation of ratings on quality and quantity of production: .80.

311

HAY, E. N.: Predicting success in machine bookkeeping. *Journal of Applied Psychology*, 1943, 27: 483–493.

1. SUBJECTS: 39 bookkeepers.
2. TESTS: 25 tests or subtests given; 3 final batteries: (1) Army Alpha Examination (Nebraska Revision), Number Series; Fryer Name Finding Test; Minnesota Vocational Test for Clerical Workers, Number Series; (2) Otis Self-administering Test of Mental Ability, 20-minute, Form b; Minnesota Vocational Test for Clerical Workers, Number Series and Name Series; (3) Otis Self-administering Test of Mental Ability, 20-minute, Form b; Minnesota Vocational Test for Clerical Workers, Number Series; Army Alpha Examination (Nebraska Revision), Number Series; Fryer Name Finding Test.
3. CRITERION: production, speed of posting; 4 days at 3 different periods for most S's. All S's on the job for 8 months before production measured.
4. VALIDITY: multiple correlations of the 3 batteries with criterion:

BATTERY	CORRELATION (R)
1	.70 ± .05
2	.65 ± .06
3	.71 ± .05

Prediction by each battery of per cent successful in a successful group (production above 109, $N = 21$) and in a failing (production below 110, $N = 18$) group:

BATTERY	PER CENT SUCCESSES PREDICTED	
	SUCCESSFUL GROUP	FAILING GROUP
1	91	28
2	81	28
3	85	28

5. RELIABILITY: correlation of production of days 1 and 3 with days 2 and 4 on three occasions: .93, .85, .98. Correlation of production between one occasion and another: .83, .79, .72.

312

HOLLIDAY, F.: The relation between psychological test scores and subsequent proficiency of apprentices in the engineering industry. *Occupational Psychology*, 1943, 17: 168–185.

1. SUBJECTS: 6 groups: (1) 91 trade apprentices, (2) 41 trade apprentices, (3) 45 toolmaker's apprentices, (4) 34 toolmaker's apprentices, (5) 71 engineer apprentices, (6) 30 engineer apprentices.
2. TESTS: (1) N.I.I.P. Form Relations Test, (2) Vincent Mechanical Models, (3) N.I.I.P. Space Perception Test, (4) N.I.I.P. Figure Construction Test, (5) N.I.I.P. Intelligence Test.
3. CRITERION: rating by supervisor, 3 proficiency groups.
4. VALIDITY: correlation of test scores and criterion:

GROUP	TEST						MINIMUM SIGNIFICANT CORRELATION
	1	2	3	4	5	1–4	
1	.29	.52	.31	.50	.32	.50	.21
2	.37	.33	.23	.23	.29	.46	.28
3	.54	.60	.57	.69	.59	.71	.27
4	.52	.39	.27	.42	.36	.44	.30
5	.33	.27	.31	.36	.51	.36	.23
6	.22	.42	.45	.48	.42	.44	.32

5. RELIABILITY: rerating after 3 years correlated with original rating for 2 small groups: for $N = 24$: .46; for $N = 12$: .72.

Reliabilities of tests (test-retest), Battery 1–4: .84 and .80 for the 2 groups; Test 5: .85 and .82 for the 2 groups.

313

JURGENSEN, C. E.: Extension of the Minnesota Rate of Manipulation Test. *Journal of Applied Psychology*, 1943, 27: 164–169.

1. SUBJECTS: 60 converting machine operators in a paper mill, males; tested at hiring, but not hired on basis of test.
2. TESTS: Minnesota Rate of Manipulation Test, Zeigler revision, but with 7 additional speed measures, making 9 in all.
3. CRITERION: independent ratings by 3 supervisors on speed of worker, 5 categories.
4. VALIDITY: correlations of ratings and speed scores:

   Validity coefficients range from .03 for placing, left hand, to .57 for turning and placing, right hand.

   Maximum multiple *R* is found with 3 tests: turn and place, right hand; turn; and place, left hand: .66.

   Using validity coefficients with *N* of 60 and test intercorrelations with *N* of 212, a maximum multiple *R* of .72 is found with the following 5 tests: turn and place, right; turn; place, left; place, right; and place with both hands simultaneously.
5. RELIABILITY: correlation of ratings of supervisors: A and B: .43; A and C: .56; B and C: .52; as estimated by Spearman-Brown prophecy formula: .75.

   Reliability of test by correlation of two timed trials: from .87 to .96.

314

MACELROY, A. J. (Ed.): *Acorn National Aptitude Tests: Clerical Aptitude Test, Manual.* Rockville Center, N.Y.: Acorn Publishing Company, 1943.

1. SUBJECTS: 576 clerical workers.
2. TESTS: Clerical Aptitude Test (Acorn).
3. CRITERION: shop ratings from cumulative employment record and grading by supervisors (method not given).
4. VALIDITY: correlation of test scores and criteria.

CRITERION	CORRELATION
Accuracy	.71
Speed	.62
Record of promotion	.49
Record of earnings	.27
Over-all shop rating	.52

5. RELIABILITY: not given.

315

REPPERT, H. C., and BOROW, H.: *Industrial validation and standardization of the Personal Audit*. Unpublished study. State College, Pa.: The Personnel Service of the Pennsylvania State College, 1943. (Personal communication from C. R. Adams.)

1. SUBJECTS: 120 chemical operators, female (tested at time of employment).
2. TESTS: The Personal Audit.
3. CRITERION: ratings by supervisors as desirable or undesirable after several weeks to 3 months on the job.
4. VALIDITY: correlation (biserial) between criterion and various subtests (only those exceeding their probable error by 3 or 4 times are reported):

SUBTEST	CORRELATION
I (seriousness)	.4
V (stability)	.2
IX (contentment)	.3

5. RELIABILITY: correlation between rating several weeks apart by same supervisor ($N =$ approximately 90): .7.

316

RETAN, G. A.: Emotional instability and teaching success. *Journal of Educational Research*, 1943–44, 37: 135–141.

1. SUBJECTS: 152 teachers with at least 2 years' experience.
2. TESTS: rating by experimenter as stable or unstable on basis of either

the Pressey X-O Test or the Bernreuter Personality Inventory and an interview; 73 rated stable, 79 unstable.

3. CRITERION: rating by supervisor on 4-point scale.

4. VALIDITY: comparison of the two sets of ratings:

EMOTIONAL STABILITY	SUPERINTENDENT'S RATING		TOTAL *N*
	GOOD-EXCELLENT	FAIR-POOR	
Stable	55	18	73
Unstable	41	38	79
Total *N*	96	56	152

5. RELIABILITY: not given.

317

RUCH, F. L.: Selecting clerical workers. California Test Bureau, *Employment Testing Bulletin 3*, 1943. Pp. 3.

1. SUBJECTS: 217 general clerical workers.

2. TESTS: Ruch Survey of Working Speed and Accuracy.

3. CRITERION: rating by supervisors as better than average or poorer than average.

4. VALIDITY: comparison of per cent rated better than average and per cent rated poorer than average at each of 5 grades on test (*N* not given):

TEST GRADE	PER CENT BETTER THAN AVERAGE	PER CENT POORER THAN AVERAGE
A	100	0
B	82	18
C	54	46
D	22	78
E	0	100

5. RELIABILITY: not given.

318a

STRONG, E. K., JR.: *Vocational interests of men and women.* Stanford University, Calif.: Stanford University Press, 1943. xxix + 746, pp. 491–494.

1. SUBJECTS: 210 life insurance agents.
2. TESTS: Strong Vocational Interest Blank, life insurance scale.
3. CRITERION: (1) average annual paid-for production, (2) per cent writing given amount.
4. VALIDITY: comparison of Criterion 1 and test ratings:

	TEST RATING				
	C	B−	B	B+	A
N	16	5	21	43	124
Production	$62,000	$130,000	$108,000	$127,000	$169,000

Comparison of per cent producing various amounts of business and test ratings:

	N	TEST RATINGS				
		C	B−	B	B+	A
0–$49,000	38	52	33	27	22	9
$50,000–$99,000	52	24	17	45	34	16
$100,000–$149,000	31	18	17	14	7	19
$150,000–$199,000	37	6	17	9	13	22
$200,000–$399,000	47	0	17	0	20	31
$400,000 up	6	0	0	5	4	3

5. RELIABILITY: correlation of one year's production with the next year's production: .78, .77, .84, .74; correlation of average production of 1926 and 1927 with average production of 1929 and 1930: .81.

318b

Strong, E. K., Jr.: *Vocational interests of men and women.* Stanford University, Calif.: Stanford University Press, 1943. xxix + 746, p. 497.

1. SUBJECTS: 209 life insurance agents.
2. TESTS: Strong Vocational Interest Blank, a new life insurance scale based on men writing $200,000 a year or more for 3 years.
3. CRITERION: amount of insurance written per year.
4. VALIDITY: comparison of test rating and production:

GROUP	N	PRODUCTION	MEDIAN	Q	TEST RATINGS				
					A	B+	B	B−	C
c	57	$300,000 and up	406.0	92.3	86%	12%	2%	0%	0%
b	40	$200,000–$300,000	300.0	132.5	81	12	5	2	0
a	112	$100,000–$200,000	257.1	140.0	67	21	10	2	0

C.R. between medians of Groups a and c = 5.1.

C.R. between medians of Groups a and b = 2.3.

5. RELIABILITY: not given.

318c

Strong, E. K., Jr.: *Vocational interests of men and women.* Stanford University, Calif.: Stanford University Press, 1943. xxix + 746, pp. 502–503.

1. SUBJECTS: 59 supervisors of a large industrial concern.
2. TESTS: Strong Vocational Interest Blank, various scales.
3. CRITERION: rating (by superiors presumably).
4. VALIDITY: correlation (product moment) of test scores and criterion:

SCALE	CORRELATION
Chemist	.34
Engineer	.31
Certified Public Accountant	.25
Teacher	.14
Personnel manager	.13
Accountant	.03
Lawyer	.01
Life insurance salesman	−.31

5. RELIABILITY: not given.

319

Tiffin, J., and Lawshe, C. H., Jr.: An adaptability test: a fifteen minute mental alertness test for use in personnel allocation. *Journal of Applied Psychology*, 1943, 27: 152–163.

1. SUBJECTS: 88 clerical employees in a paper mill.
2. TESTS: Tiffin and Lawshe Adaptability Test, Forms A and B.
3. CRITERION: divided by supervisors into A (good) and B (poor) groups.
4. VALIDITY: comparison of average scores for the two groups:

FORM	GROUP A ($N = 50$)	GROUP B ($N = 38$)	DIFF.	C.R.
A	21.7	18.4	3.3	3.2
B	22.2	17.2	5.0	4.5
1st given	21.7	17.2	4.5	4.6
2nd given	23.6	18.6	5.0	4.8

Correlation of test score and success, biserial *r*:

Form A	.40
Form B	.56
1st given	.59
2nd given	.65

5. RELIABILITY: split-half reliability, $N = 957$, Form A: .90; Form B: .88. Alternate form reliability, $N = 942$, Form A vs. Form B: .89; 1st form given vs. 2nd form given: .89.

Reliability of criterion not given.

320

Benge, E. J.: Use of tests in selecting personnel. *Food Packer*, December, 1944, 36–37.

1. SUBJECTS: 173 applicants, hired regardless of test score. Work said to be in a factory similar to a canning factory, requiring rapid handwork, handling semiautomatic machinery, and detection of defects in raw materials or in finished products passing by on a conveyor.

2. TESTS: (1) a hand dexterity test (discs to be placed on pins), (2) an intelligence test.

3. CRITERION: subjects evaluated as satisfactory or unsatisfactory by a merit rating; 79 satisfactory, 94 unsatisfactory.

4. VALIDITY: Test 1: with a critical score of 9 minutes, 62, or 78 per cent, of the satisfactory group passed, 17 failed; 68, or 72 per cent, of the unsatisfactory group failed, 26 passed.

   Test 2: of the unsatisfactory group who passed Test 1, 14 could have been eliminated by Test 2; of the satisfactory group, 12 who failed would have been saved by Test 2. Combined tests failed in 17 out of 173 cases.

5. RELIABILITY: not given.

321

COLEMAN, J. H.: Vision test for better utilization of manpower. *Factory Maintenance and Management*, 1944 (July), 102: 110–115.

1. SUBJECTS: 97 milling machine operators, Sperry Gyroscope Company.
2. TESTS: Ortho-Rater: Distance Binocular Acuity.
3. CRITERION: rated by supervisors as superior, good, fair, or poor.
4. VALIDITY: comparison of ratings with test scores:

RATING	TEST SCORE												TOTAL
	3	4	5	6	7	8	9	10	11	12	13	14	*N*
Poor				2	2	5	4	2	3				18
Fair	1			1	1	10	4	6	7			1	31
Good				1	4	4	8	3	7	2			29
Superior					2	1	3	5	6	1	1		19

   If the critical score is 9, 9 of the poor group and 3 of the superior group are eliminated.

5. RELIABILITY: not given.

322

Dorcus, R. M.: A brief study of the Humm-Wadsworth Temperament Scale and the Guilford-Martin Personnel Inventory in an industrial situation. *Journal of Applied Psychology*, 1944, 28: 302–307.

1. SUBJECTS: 48 workers in the manufacture of aircraft parts; some problem employees, some not.
2. TESTS: (1) Humm-Wadsworth Temperament Scale, (2) Guilford-Martin Personnel Inventory.
3. CRITERION: ratings by 2 groups of superiors as to signs of maladjustment, discontent, etc.
4. VALIDITY: Test 1: selected 72.8 per cent of poor group, 69.2 per cent of good group. Test 2: selected 68.1 per cent of poor group, 73.1 per cent of good group. Both together: correctly placed 50 per cent of poor group, 61.5 per cent of good group.
5. RELIABILITY: not given for criterion. Interpretation of Test 1: in 44 cases there was agreement between the 2 interpreters; in other 4 cases, agreement after using supplementary key.

323

Grimsley, G.: Draftsmen—aptitude tests cut turnover. *Western Industry*, 1944, 9 (1): 32, 36.

1. SUBJECTS: (a) 165 draftsman trainees in training for detail drafting in an aircraft company engineering department (male and female), (b) 394 draftsman trainees.
2. TESTS: (1) California Capacity Questionnaire, (2) Minnesota Paper Formboard, (3) MacQuarrie Test for Mechanical Ability, (4) Otis Self-administering Test of Mental Ability, higher examination.
3. CRITERION: Group a: grades in training class. Group b: termination rate of "past several months."
4. VALIDITY: Group a: correlation of test score and training class grades:

TEST	CORRELATION
1	.26
1—nonlanguage sections	.36
2	.48
3	.41
3—location	.37
3—blocks	.34
3—pursuit	.34
4	.15

Group b: comparison of per cent termination for total test score grades of A (best) to F (complete failure) on the following test battery: Test 1: nonlanguage sections; Test 2; and Test 3: Location, Blocks, and Pursuit.

GRADE	PER CENT TERMINATION
A	7.7
B	14.9
C	16.4
D	26.6
E	30.6
F	61.3

5. RELIABILITY: not given.

324

JURGENSEN, C. E.: Report on the "Classification Inventory," a personality test for industrial use. *Journal of Applied Psychology*, 1944, 28: 445–460.

1. SUBJECTS: 40 technical salesmen in Kimberly-Clark Creped Wadding Division.
2. TESTS: Jurgensen Classification Inventory (an industrial personality test).
3. CRITERION: rated on sales ability by Sales Manager and Assistant Sales Manager; each made 3 independent ratings one month apart.
4. VALIDITY: correlation (Pearsonian) between test score and criterion: .80. Difference between upper and lower half of the group, *t*-ratio: 11.4.
5. RELIABILITY: reliability of combined ratings: .91.

   Reliability of test, odd *versus* even items, corrected by Spearman-Brown formula: .95.

325

Kraft, M. A., and Forbes, T. W.: Evaluating the influences of personal characteristics on the traffic accident experience of transit operators. National Research Council, Highway Research Board, *Proceedings*, 1944, 24: 278–291.

1. SUBJECTS: 428 streetcar operators, on the job for at least 5 years.
2. TESTS: (1) 88 items recorded (76 used in analysis) concerning personal and medical data, (2) hand dynamometer, (3) Keystone Telebinocular, including DB Test for stereopsis.
3. CRITERION: accident index: ratio of actual number of accidents to number expected (accident expectancy, mileage, daily and hourly variations in hazard, seasonal variations in hazard, and route variations in hazard taken into account).
4. VALIDITY: correlation of test item and criterion: (1) systolic blood pressure: .35 (P.E., .04), (2) body weight (expressed as ratio to the height and age norms): .08 (P.E., .04). States that many regression lines are curvilinear. No further data given. About ⅓ of the 76 items are said to show relationships to the accident index which are statistically reliable.
5. RELIABILITY: not given.

326

Martin, H. G.: Locating the troublemaker with the Guilford-Martin Personnel Inventory. *Journal of Applied Psychology*, 1944, 28: 461–467.

1. SUBJECTS: (a) 51 workers, (b) 43 textile workers (30 rated satisfactory, 13 rated unsatisfactory).
2. TESTS: Guilford-Martin Personnel Inventory.
3. CRITERION: rating by supervisors and personnel executives as satisfactory or troublemakers.
4. VALIDITY: Group a: test classifies as undesirable 82 per cent of those so classified by management. Test classifies as undesirable 38 per cent of those satisfactory to management.

   Group b: test classifies as undesirable 85 per cent of those unsatisfactory to management. Test classifies as undesirable 36 per cent of those satisfactory to management.

5. RELIABILITY: not given for criterion. Reliability of test:

.91 for Trait Co (cooperativeness)
.83 for Trait O (objectivity)
.80 for Trait Ag (agreeableness)

327

OBERHEIM, G. M.: The relationship between scores on a clerical test and clerical proficiency in library work. *Journal of Educational Psychology*, 1944, 35: 493–499.

1. SUBJECTS: 46 men, 23 women, library assistants.
2. TESTS: National Institute of Industrial Psychology Clerical Test, American Revision.
3. CRITERION: rating on work performance.
4. VALIDITY: correlation between total test score and criterion, also between each subtest and criterion; corrected for attentuation:

	SUBTEST							TOTAL SCORE
	1	2	3	4	5	6	7	
Men	.49	.37	.48	.15	.64	.58	.50	.75
Women	.49	.50	.40	.19	.07	.28	.52	.62

5. RELIABILITY: correlation of ratings for 2 "sets" of raters: .77.

328

PIOTROWSKI, Z., CANDEE, B., BALINSKI, B., HOLZBERG, S., and VON ARNOLD, B.: Rorschach signs in the selection of outstanding young male mechanical workers. *Journal of Psychology*, 1944, 18: 131–150.

1. SUBJECTS: 78 male mechanical workers (mostly machine shop jobs: sheet metal and welding; a few draughtsmen).
2. TESTS: Rorschach (group test).
3. CRITERION: classified by foreman as outstanding or not outstanding.
4. VALIDITY: comparison of various scorings for the 2 groups:

a—Distribution of 4 signs

	SIGN			
	m	*Frsx*	*hEvd*	*noWF*
Group with sign:				
Outstanding	29	35	34	35
Not outstanding	6	14	13	15
Group without sign:				
Outstanding	16	10	11	10
Not outstanding	27	19	20	18
Discriminative values	0.72	0.69	0.69	0.68

b—Point value distribution of the 4 signs ($m = 2$ points, all others = 1 point)

	POINTS								
	3–5	0–2	TOTAL	5	4	3	2	1	0
Outstanding	37	8	45	14	12	11	7	1	0
Not outstanding	4	29	33	0	1	3	14	9	6

Chi-square for 3 or more points versus 2 or less: 43.36.

5. RELIABILITY: not given.

329

RUCH, F. L.: *How to use employment tests.* California Test Bureau, *Employment Testing Bulletin 1*, 1944. Pp. 15.

1. SUBJECTS: 128 sewing-machine operators.
2. TESTS: (1) MacQuarrie Test for Mechanical Ability, Tracing, (2) MacQuarrie Test for Mechanical Ability, Tapping, (3) MacQuarrie Test for Mechanical Ability, Dotting, (4) MacQuarrie Test for Mechanical Ability, Pursuit, (5) a needle-threading test (devised for the study), (6) a materials-guiding test (devised for the study), (7) Thurstone Personality Schedule, modified, (8) O'Connor Finger Dexterity Test.
3. CRITERION: Bedaux points, 1-week.
4. VALIDITY: comparison of the median percentile of the best 25 per cent and the poorest 25 per cent of operators on the various tests:

TEST	BEST GROUP	POOREST GROUP
1	83.3	58.1
2	60.2	32.5
3	67.0	40.5
4	67.1	38.3
5	53.7	46.3
6	53.3	50.6
7	57.8	43.0
8	50.0	48.2

5. RELIABILITY: not given.

330

TIFFIN, J., and LAWSHE, C. H.: How tests can strengthen the training program. *Factory Maintenance and Management*, 1944 (March), 102: 119–121.

1. SUBJECTS: 225 radio tube assemblers.
2. TESTS: (1) Ortho-Rater: Distance Visual Acuity, (2) Ortho-Rater: Near Visual Acuity, (3) A finger dexterity test.
3. CRITERION: (a) production records, (b) cost of training.
4. VALIDITY: 1. Distance acuity:

TEST SCORE	PER CENT ABOVE AVERAGE IN PRODUCTION
Upper half..........	49
Lower half..........	60

2. Near acuity:

TEST SCORE	PER CENT ABOVE AVERAGE IN PRODUCTION
Upper half..........	68
Lower half..........	34

3. Finger dexterity: those with poorest finger dexterity cost the company $59 to train. Those with best finger dexterity cost the company $36.40 to train.

5. RELIABILITY: not given.

331

TIFFIN, J., and WIRT, S. E.: The importance of visual skills for adequate job performance in industry. *Journal of Consulting Psychology*, 1944, 8: 80–89. (Also reported in *Purdue Engineering Bulletin*, Extension Series, No. 59, 1946, 27–40.)

1. SUBJECTS: 225 radio tube assemblers.
2. TESTS: Ortho-Rater visual tests: near visual acuity used.
3. CRITERION: rating by supervisor as satisfactory or not entirely satisfactory.
4. VALIDITY: per cent rated satisfactory in various test score groups:

SCORE	PER CENT RATED SATISFACTORY
8 or less	22
13 or more.	85

Per cent of total group rated satisfactory: 53.

5. RELIABILITY: not given.

332

TIFFIN, J., and WIRT, S. E.: Near versus distance visual acuity in relation to success on close industrial jobs. Supplement to the *Transactions of the American Academy of Ophthalmology and Otolaryngology*, June, 1944, 9–16.

1. SUBJECTS: 199 hosiery loopers, female.
2. TESTS: binocular visual acuity at optical equivalent of 20 feet.
3. CRITERION: production, from payroll records.
4. VALIDITY: comparison of test scores and average hourly production (figures approximate, read from graph):

DISTANCE ACUITY	PRODUCTION IN DOZENS OF PAIRS
20/60	4.1
20/50	4.0
20/40	3.8
20/30	3.6
20/25	3.5
20/20	3.3
20/15	2.9
20/12	2.6

5. RELIABILITY: not given.

333

ACHARD, F. H., and CLARKE, F. H.: You can measure the probability of success as a supervisor. *Personnel*, 1944–45, 21: 353–373.

1. SUBJECTS: "over 300 successful and indifferent supervisors," 4 groups: gas and electric service foremen, bookkeeping and clerical supervisors, meter-reading and collection foremen, and district office managers; groups not separated.
2. TESTS: (1) O'Connor English Vocabulary Test, Worksample 95, Form EA, (2) Otis Self-administering Test of Mental Ability, Higher Form, (3) Bennett Test of Mechanical Comprehension, (4) Bernreuter Personality Inventory, (5) Strong Vocational Interest Blank, (6) Minnesota Vocational Test for Clerical Workers, (7) Minnesota Paper Formboard, Revised.
3. CRITERION: a general summary rating based on a supervisory rating scale, presumably by superiors.
4. VALIDITY: comparison of rating based on test scores (5-point scale for each test, then combined) with criterion: the 2 ratings agreed within 1 point in 86 per cent of the cases. "All the tests distinguished to some extent between the good and the indifferent supervisors of all the groups." No supporting data given.
5. RELIABILITY: not given.

334

Adams, C. L.: *The Personal Audit, Forms LL and SS, Manual.* Chicago: Science Research Associates, 1945.

1. SUBJECTS: 100 out of 262 clerical employees in 3 government agencies.
2. TESTS: The Personal Audit.
3. CRITERION: selected by supervision as "excellent and highly satisfactory" or "highly unsatisfactory and undesirable" ($N = 50$).
4. VALIDITY: comparison of the test scores for the extreme groups:

GROUP	TEST PERFORMANCE
50 most unsatisfactory......	Part 4 (frankness): 39th percentile
50 excellent	Average percentile = 54th. Fewer extreme scores on all parts of test than other group. Also tended to make higher average scores on Parts 1, 3, 4, 6, and 8 than "most unsatisfactory" group.

5. RELIABILITY: not given.

335

Coleman, J. H.: The visual skills of precision instrument assemblers. *Journal of Consulting Psychology*, 1945, 9: 165–170.

1. SUBJECTS: 501 precision instrument assemblers.
2. TESTS: Ortho-Rater visual tests.
3. CRITERION: rating by foreman.
4. VALIDITY: 6 tests discriminate between better and least satisfactory assemblers within the range of critical scores given:

Vertical phoria, near	3–7
Vertical phoria, far	4–7
Binocular acuity, near.........	11–15
Binocular acuity, far	9–15
Lateral phoria, near	5–13
Lateral phoria, far...........	3–10

If only those workers having binocular acuity at the work-point of 20/18 were chosen, it would result in 25 per cent more good and excellent workers and in 14 per cent fewer average and below-average workers.

Per cent of nonqualifying group rated better than average: 30.

Per cent of qualifying group rated better than average: 45.

5. RELIABILITY: not given.

336

COLEMAN, J. H., and FEINBERG, R.: Vision tests for inspectors insure good placement. *Factory Maintenance and Management*, 1945 (January), 103: 106–110.

1. SUBJECTS: 2 groups: (a) 125 assembly inspectors, (b) 221 machining inspectors, Sperry Gyroscope Company.
2. TESTS: Ortho-Rater Vision Tests.
3. CRITERION: rating by supervisors on a 5-point scale.
4. VALIDITY:

Group a: per cent of total group rated good or excellent: 34

% of group meeting "visual standards" rated good or excellent: 50

% of group not meeting "visual standards" rated average, fair, or poor: 78

% of group meeting "visual standards" rated average, fair, or poor: 50

Group b: almost 50 per cent more "excellent" inspectors among those who meet visual standards. More than twice as many are rated poor among those who do not meet visual standards as among those who do meet visual standards.

5. RELIABILITY: not given.

337a

COOK, D. W.: Some practical results from tests. *Proceedings of the Personnel Selection Clinic*. Kansas City, Mo.: Greater Kansas City Committee for Economic Development, 1945 (May 15–18), pp. 125–133.

1. SUBJECTS: 190 typists.
2. TESTS: a typing test.

3. CRITERION: job performance after 6 months (method of measurement not given).
4. VALIDITY: comparison of per cent satisfactory of those scoring above and below 40 words per minute on the test:

TEST SCORE	PER CENT SATISFACTORY	PER CENT UNSATISFACTORY
40 or above	100	0
Below 40	45	55

5. RELIABILITY: not given.

337b

COOK, D. W.: Some practical results from tests. *Proceedings of the Personnel Selection Clinic*. Kansas City, Mo.: Greater Kansas City Committee for Economic Development, 1945 (May 15–18), pp. 125–133.

1. SUBJECTS: 57 instructors in a large, diversified factory.
2. TESTS: an intelligence test (presumably Otis Self-administering Test of Mental Ability).
3. CRITERION: rated on job performance as good ($N = 31$) or poor ($N = 26$) by supervisors.
4. VALIDITY: comparison of per cent of good and poor groups, "passing" and "failing" the test (critical score not given):

TEST SCORE	GOOD GROUP	POOR GROUP
Passing	90%	23%
Failing	10	77

5. RELIABILITY: not given.

337c

COOK, D. W.: Some practical results from tests. *Proceedings of the Personnel Selection Clinic*. Kansas City, Mo.: Greater Kansas City Committee for Economic Development, 1945 (May 15–18), pp. 125–133.

1. SUBJECTS: 183 supervisors (already selected for intelligence).

2. TESTS: a temperament scale.
3. CRITERION: designated as successful or unsuccessful (method not given).
4. VALIDITY: comparison of per cent successful and unsuccessful, who "passed" and "failed" test (good or poor profile, by inspection):

PROFILE	SUCCESSFUL	UNSUCCESSFUL
Passing	72%	28%
Failing	10	90

5. RELIABILITY: not given.

337d

COOK, D. W.: Some practical results from tests. *Proceedings of the Personnel Selection Clinic*. Kansas City, Mo.: Greater Kansas City Committee for Economic Development, 1945 (May 15–18), pp. 125–133.

1. SUBJECTS: 84 accountants.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) Equation Test, constructed for this study.
3. CRITERION: designated as above average or below average on job (method not given).
4. VALIDITY: comparison of per cent above and below average who passed and failed the tests:

	BELOW AVERAGE	ABOVE AVERAGE
Test 1:		
Passing	30%	70%
Failing	72	28
Test 2:		
Passing	32	68
Failing	84	16
Both tests:		
Passing	28	72
Failing	94	6

5. RELIABILITY: not given.

338

File, Q. W.: The measurement of supervisory quality in industry. *Journal of Applied Psychology*, 1945, 29: 323–337.

1. subjects: 557 supervisors in 6 industrial firms.
2. tests: "How Supervise?" Experimental Edition, 2 forms, 204 items.
3. criterion: ratings by management on Purdue Rating Scale for Supervisors.
4. validity: critical ratios of differences between the average responses of upper and lower 27 per cent of supervisors. 23 items yielded critical ratios of 2.0 or better. Two final forms of the test, having 70 items each, were constructed.
5. reliability: reliability of the test for scores on the two forms combined: .84 ± .01. Reliability of the rating scale "questionable."

339

Forlano, G., and Kirkpatrick, F. H.: Intelligence and adjustment measurements in the selection of radio tube mounters. *Journal of Applied Psychology*. 1945, 29: 257–261.

1. subjects: 20 radio tube mounters, new employees, female.
2. tests: (1) Otis Self-administering Test of Mental Ability, (2) Bell Adjustment Inventory, (3) Washburne Social Adjustment Inventory.
3. criterion: ratings by supervisors as good or fair.
4. validity: comparison of test scores of the two groups:

TEST	SCORE	GOOD GROUP	FAIR GROUP
1	115 and over	4	3
	95–114	3	3
	94 and below	1	6
2 and 3 (composite)	Above average	4	0
	Average	4	7
	Below average	0	5
1, 2, and 3 (composite)	12	2	0
	9	4	1
	6	1	3
	3	1	5
	0	0	3

The elimination of all whose score on the composite of tests 1, 2, and 3 is below 3 will result in the retention of 88 per cent of the good and 39 per cent of the fair employees.

5. RELIABILITY: not given.

340

GOTHAM, R. E.: Personality and teaching efficiency. *Journal of Experimental Education*, 1945–46, 14: 157–165.

1. SUBJECTS: 72 rural teachers (1-room schools), 7th and 8th grades.
2. TESTS: (1) Bernreuter Personality Inventory, (2) Washburne Social Adjustment Inventory, (3) Rudisill Scale for the Measurement of the Personality of Elementary School Teachers.
3. CRITERION: (1) pupil change, as measured by tests, (2) composite ratings by superintendent, supervisor, and investigator.
4. VALIDITY: correlation of tests and criterion:

TEST	CRITERION 1, CORRELATION	CRITERION 2, CORRELATION
1—N	−.14	.16
1—S	−.11	.01
1—D	.04	.19
2	.06	.40
3	.03	.16

5. RELIABILITY: not given.

341

JONES, F. N., and SMITH, C. J.: *The relation of intelligence test scores and manual dexterity test scores to job performance in a meat packing plant.* Unpublished, 1945.

1. SUBJECTS: 17 casings inspectors. (This is the total number of employees in the department.)
2. TESTS: (1) Wonderlic Personnel Test, (2) Minnesota Rate of Manipulation Test.
3. CRITERION: per cent production over a 2-week period.
4. VALIDITY: correlation (product moment) of test scores and criterion:

TEST	CORRELATION
1	−.31
2—placing	−.30
2—turning	−.39

5. RELIABILITY: correlation of 1st week's production with 2nd week's production: .92.

342

JONES, F. N., and SMITH, C. J.: *The relation of visual efficiency to job performance in a meat packing plant.* Unpublished, 1945.

1. SUBJECTS: 4 groups: (a) 17 casings inspectors, (b) 66 employees in the shipping cooler, (c) 47 bacon slicers and wrappers, (d) 26 wiener skin-

ners. (In each case, all employees of the department in question are included.)

2. TESTS: Ortho-Rater Vision Tests.
3. CRITERION: Group a: per cent production over a 2-week period. Groups b and c: rating by supervisor, average of 2 ratings, 1 month apart. Group d: average of 2 ratings, 1 month apart, by each of 2 supervisors.
4. VALIDITY: correlation (product moment) of test scores and criterion:

TEST	CORRELATION*			
	GROUP a	GROUP b	GROUP c	GROUP d
Far vertical phoria	−.03	.13	−.09	−.32
Near vertical phoria	−.06	.06	−.08	−.02
Far lateral phoria	.01	.12	.29	−.30
Near lateral phoria	−.15	−.06	.03	.03
Far acuity, both eyes	.07	.09	−.09	.37
Near acuity, both eyes	−.27	.18	.06	.05
Far acuity, worse eye	.13	.24	.00	−.18
Near acuity, worse eye	−.10	.23	.13	−.18
Depth perception	−.08	.03	.03	.20
Color perception	.03	−.02	.04	−.10

* The scores from which these correlations were calculated are in terms of deviation from perfect balance. The signs have been chosen so that a positive correlation indicates that the further from balance an individual's eyes, the poorer is his job performance.

5. RELIABILITY: Group a: 1st week's production correlated with 2nd week's production: .92.

   Group b: 1st rating correlated with 2nd rating: .45.

   Group c: 1st rating correlated with 2nd rating: .84.

   Group d: supervisor No. 1, 1st rating correlated with 2nd rating: .94; average of 2 ratings by supervisor No. 1 correlated with 2nd rating of supervisor No. 2: .81.

343

KNOWLES, W.: We've stopped hunch hiring. *Nation's Business*, March 1945, 23–24, 58.

1. SUBJECTS: 100 general mechanical workers, hired with no selection at all.

2. TESTS: (1) a test of "learning ability," (2) a "carefulness test," (3) putting bolts in holes without visual control.
3. CRITERION: rating of quality of airplane parts made during training, 3 groups.
4. VALIDITY: comparison of per cent Good, Fair, and Poor in terms of quality of work in total group and in the group composed of the top 50 per cent on test score:

GROUP	GOOD	FAIR	POOR
Total	25	50	25
Top 50 per cent	38	58	4

5. RELIABILITY: not given.

344

LADUKE, C. V.: The measurement of teaching ability: study number three. *Journal of Experimental Education*, 1945–46, 14: 75–100.

1. SUBJECTS: 34 rural teachers, 30 female, 4 male (1-room schools).
2. TESTS: (1) American Council on Education Psychological Examination, (2) Theory and Practice of Mental Hygiene, (3) Scale for Measuring Attitude toward Teachers and the Teaching Profession, (4) Harnly Statements about Education, (5) Jackson Social Proficiency Test.
3. CRITERION: (1) pupil change, as measured by tests, (2) composite rating by supervisor, 3 rating scales, (3) composite rating by superintendent, 3 rating scales.
4. VALIDITY: correlation of various tests with each criterion:
   With criterion 1: multiple correlation of Tests 1 (parts 1, 3, and 4), 2, 5, and 4 (part 4) and criterion: .80.
   With criteria 2 and 3: correlation of separate tests and criterion:

TEST	SUPERVISOR'S RATING	SUPERINTENDENT'S RATING
1	−.18	−.12
2	.18	.17
3	−.10	−.15
4—Liberalism	.32	.39
4—Conservatism	−.32	−.39
5	−.13	.01

5. RELIABILITY: reliability of pupil tests: .62 to .72; intercorrelations of various rating scales: .53 to .88.

345

LENNON, R. T., and BAXTER, B.: Predictable aspects of clerical work. *Journal of Applied Psychology*, 1945, 29: 1–13.

1. SUBJECTS: 116 clerical workers, highest and lowest of an original group of 250 clerks, stenographers, typists, and miscellaneous clerical workers.
2. TESTS: (1) Learning Ability Tests, (2) Clerical Aptitude Test.
3. CRITERION: supervisors filled out a 90-item check list on the performance of the employee.
4. VALIDITY: highest 27 per cent ($N = 58$) and lowest 27 per cent ($N = 58$) on each test compared; significance of the differences between the groups on each item of the check list was measured by chi square, the 10 per cent level being taken as significant. The number of check list items in each phase of work found to be predicted by the tests were:
    1. Understanding of work: 8 out of 9 items
    2. Errors in performance: 3 out of 19 items
    3. Quantity and speed of work: 8 out of 10 items
    4. Performance of multiple tasks: 2 out of 2 items
    5. Unnecessary duplication in work effort: 2 out of 2 items

    Among the following phases of work no test items were found to be significant: typing, shorthand, grammar, spelling, statistical work, checking of one's work, orderliness, attitudes toward work, and "personality" traits.
5. RELIABILITY: correlation of the ratings of two supervisors: .69 ($N = 62$).

346

MCMURRY, R. N., and JOHNSON, D. L.: Development of instruments for selecting and placing factory employees. *Advanced Management*, 1945, 10: 113–120.

1. SUBJECTS: (a) 97 electric arc welders, (b) 140 assemblers of heavy equipment for army, (c) 69 inspectors, (d) 33 cranemen.

2. TESTS: (1) Thurstone Identical Forms Test (Chicago Tests of Primary Mental Ability: subtest on space), (2) Bennett Mechanical Comprehension Test, (3) Minnesota Rate of Manipulation Test. (2 intelligence tests given: results not reported.)
3. CRITERION: median rating of 3 superiors as to success on the job after one to one and one-half years.
4. VALIDITY: correlation (method not specified) of rating and test score:

GROUP	*N*	TEST OR TESTS	CORRELATION
a	97	1	.64 ± .04
b	140	1 and 2 (scores added)	.66 ± .03
c	69	1	.71 ± .04
d	33	2	.65 ± .07

5. RELIABILITY: not given.

347

RICE, E. W.: Study of weighers and sealers. Personal communication to F. L. Ruch, 1945.

1. SUBJECTS: 21 weighers and sealers in ampuling department, manufacturing chemical company.
2. TESTS: Ruch Survey of Working Speed and Accuracy.
3. CRITERION: foreman's ranking.
4. VALIDITY: correlation (rank order) or test score (subtests separately) and criterion:

SUBTEST	RHO
1—number checking..........	.15
2—code.....................	.14
3—dotting	.46
4—counting	.00

5. RELIABILITY: not given.

348a

Roberts, W. H., and Ostermick, R. E.: *Test scores and ratings of ditto machine operators.* Unpublished, 1945. Pp. 12.

1. subjects: 12 ditto-machine operators.
2. tests: (1) Wonderlic Personnel Test, (2) Minnesota Vocational Test for Clerical Workers, (3) Minnesota Rate of Manipulation Test: Turning, (4) Minnesota Rate of Manipulation Test: Placing, (5) O'Connor Tweezer Dexterity Test.
3. criterion: (1) output: number of slips for a 4-day period (early in learning period), (2) supervisor's rating, 7-point scale (later in learning period).
4. validity: correlation (rank order) of test scores and criterion:

CRITERION	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5	
1	.00	.03	.19	.29	−.05	(test scores)
2	.68	.66	.23	.09	−.10	(percentile scores)
2	.78	.62				(standard scores)

5. reliability: not given.

348b

Roberts, W. H., and Ostermick, R. E.: *Test scores and ratings of ditto machine operators.* Unpublished, 1945. Pp. 12.

1. subjects: 2 groups: (a) 16 typists, (b) 22 clerks.
2. tests: (1) Wonderlic Personnel Test, (2) Minnesota Vocational Test for Clerical Workers, (3) Minnesota Rate of Manipulation: Turning, (4) Minnesota Rate of Manipulation: Placing, (5) O'Connor Tweezer Dexterity Test.
3. criterion: supervisor's rating, 7-point scale.
4. validity: correlation (rank order) of percentile scores and criterion:

GROUP	TEST				
	1	2	3	4	5
a	.58	.65	.16	−.09	.02
b	.54	.49	−.11	−.20	.66

	STANDARD SCORES	
GROUP	TEST 1	TEST 2
a	.54	.53
b	.42	.49

5. RELIABILITY: not given.

349

ROLFE, J. F.: The measurement of teaching ability: study number two. *Journal of Experimental Education*, 1945–46, 14: 52–74.

1. SUBJECTS: 47 rural teachers (one-room schools).
2. TESTS: (1) Torgerson Rating Scale, (2) Social Attitudes of Secondary School Teachers, (3) Scale of Civic Beliefs, (4) Test of Teacher-Pupil Relationships, (5) Scale for Measuring Attitude toward Teachers and the Teaching Profession, (6) Morris Trait Index L, (7) Bernreuter Personality Inventory, Bn Scale, (8) American Council on Education Psychological Examination, (9) American Council on Education Civics and Government Test. Others given, but these used in final battery.
3. CRITERION: pupil change, as measured by tests.
4. VALIDITY: multiple correlation of tests and criterion: .63.
5. RELIABILITY: reliability of pupil change: .68.

350

ROSTKER, L. E.: The measurement of teaching ability: study number one. *Journal of Experimental Education*, 1945–46, 14: 6–51.

1. SUBJECTS: 28 7th and 8th grade teachers; 17 female, 11 male.
2. TESTS: (1) American Council on Education Psychological Examination, (2) Teachers College Psychological Examination, (3) American Council on Education Civics and Government Test, (4) Social Attitudes of Secondary School Teachers, (5) Scale for Measuring Attitude toward Teachers and the Teaching Profession, (6) Morris Trait Index L, (7) Orientation Test concerning Fundamental Aims of Education,

(8) Bernreuter Personality Inventory, (9) Washburne Social Adjustment Inventory, (10) Stanford Educational Aptitudes Test, (11) Test of Teaching Problems, (12) Theory and Practice of Mental Hygiene, (13) Abilities to Organize Research Material, (14) Test on Community Planning, (15) Safeguarding Public Health.

3. CRITERION: (1) various tests of pupil change, (2) rating by supervisor on 3 rating scales, (3) rating by investigator on 3 rating scales.

4. VALIDITY: correlations of various tests with each criterion:

   With Criterion 1: highest multiple correlation is between the following 14 variables and composite Wrightstone raw change average (for pupils): Tests 13, 1, 4, 5, 12, 2, 14, 15, 3, Torgerson Rating Scale by investigator, 8 (Fc Scale), Almy-Sorenson Rating Scale by investigator, 7, 8 (Bd Scale): $R = .86$.

   With Criterion 2: correlation of supervisor's ratings (3 scales) with Test 1: .48, with Test 4: .31, with Test 8 (Bn Scale): —.32, with Test 2: .44, etc. With Criterion 3: correlation of investigator's ratings (3 scales) with Test 7: .55, with Test 6: .46, with Test 11: .39, etc.

5. RELIABILITY: reliability of rating scales (on a different group): .92, .93, and .92. Reliability of the tests ranges from .15 to .96.

351

SARTAIN, A. Q.: The use of certain standardized tests in the selection of inspectors in an aircraft factory. *Journal of Consulting Psychology*, 1945, 9: 234–236.

1. SUBJECTS: 46 inspectors, aircraft factory.

2. TESTS: (1) MacQuarrie Test for Mechanical Ability, (2) Otis Self-administering Test of Mental Ability, (3) Cardall Test of Practical Judgment, (4) Revised Minnesota Paper Formboard, (5) Purdue Industrial Training Classification Test, (6) Bennett Test of Mechanical Comprehension, (7) O'Rourke Test of Mechanical Aptitude.

3. CRITERION: ratings by 2 instructors who also knew job performance.

4. VALIDITY: multiple correlation of tests and criterion:

TESTS	*R*
All	.79
1, 3, 4	.78
1, 3	.76

5. RELIABILITY: correlation between the ratings of the 2 raters: .77.

352

SHULTZ, I. T., and BARNABAS, B.: Testing for leadership in industry. *Transactions*, Kansas Academy of Science, 1945–46, 48: 160–164.

1. SUBJECTS: 30 foremen and assistant foremen from all departments, Coleman Lamp and Stove Company (88 per cent of men at this job level in the company).
2. TESTS: (1) Bernreuter Personality Inventory, (2) Otis Quick-scoring Mental Ability Test, (3) Bennett Test of Mechanical Comprehension, Form A, (4) Strong Vocational Interest Blank: production manager and occupational level scales.
3. CRITERION: average of 4 ratings: 2 by factory manager, 5 months apart, on "budget control efficiency," and 2 by personnel director, 5 months apart, on "employee relations." 15-point scale derived from rerating in 5 groups.
4. VALIDITY: correlation (product moment) of standard scores on tests and criterion (corrected for attenuation):

TEST	CORRELATION
1	.42
2	−.02
3	.13
4—production manager	.44
4—occupational level	.26

Combined weighted standard score using Tests 1, 3, and 4 (both scales) correlated with criterion .60 (corrected for attenuation).

5. RELIABILITY: correlation between 1st and 2nd ratings by factory manager: .95; between 1st and 2nd ratings by personnel director: .66; between 1st ratings by factory manager and by personnel director: .21; between 2nd ratings by factory manager and by personnel director: .38; between combined 1st ratings and combined 2nd ratings: .85.

353

SHUMAN, J. T.: The value of aptitude tests for factory workers in the aircraft engine and propeller industries. *Journal of Applied Psychology*, 1945, 29: 156–160.

1. SUBJECTS: 6 groups: (a) 64 toolmaker learners, (b) 49 inspectors, (c) 45 engine testers, (d) 25 job setters, (e) 99 foremen, (f) 81 machine operators.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) Minnesota Paper Formboard, (3) Bennett Test of Mechanical Comprehension.
3. CRITERION: rating by supervisor as Good, Average, or Poor.
4. VALIDITY: per cent improvement in the selection of workers rated Good when the indicated minimum critical scores are set:

GROUP	TEST 1		TEST 2		TEST 3		
	% IMPROV.	MIN. CRIT. SCORE	% IMPROV.	MIN. CRIT. SCORE	% IMPROV.		MIN. CRIT. SCORE
a	9	51	7	33	5		36
b	27	51	29	37	12	M	34
					28	F	19
c	19	46	—	21	10		33
d	17	34	30	30	47		36
e	9	35	8	24	10		30
f	10	31	8	21	22	M	27
					12	F	18

5. RELIABILITY: engine testers ($N = 42$): .91; inspectors ($N = 36$): .70.

354

SHUMAN, J. T.: The value of aptitude tests for supervisory workers in the aircraft engine and propeller industries. *Journal of Applied Psychology*, 1945, 29: 185–190.

1. SUBJECTS: 297 supervisors, aircraft engine and propeller industries.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) Minnesota Paper Formboard, (3) Bennett Test of Mechanical Comprehension.
3. CRITERION: rating by superiors.
4. VALIDITY: mean improvement in the selection of supervisors rated excellent for each test:

TEST	USING A MINIMUM CRITICAL SCORE	USING THE FIRST QUARTILE
1	19%	17%
2	15	17
3	18	20

5. RELIABILITY: not given.

355

STUMP, N. F.: A statistical study of visual functions and industrial safety. *Journal of Applied Psychology*, 1945, 29: 467–470.

1. SUBJECTS: 108 factory workers; 3 groups: Accident-free, High Frequency of minor accidents, and Serious Injury groups.
2. TESTS: Ortho-Rater Vision Tests.
3. CRITERION: number and type of accidents; classified by the Safety Engineer, a Personnel Assistant, and the author.
4. VALIDITY: critical ratios between groups for 7 of the tests:

GROUPS	CRITICAL RATIO
Accident-free vs. Serious Injury	2.69
Accident-free vs. High Frequency	5.44
High Frequency vs. Serious Injury	None significant

5. RELIABILITY: not given.

356

TIFFIN, J.: Vision and industrial production. *Illuminating Engineering*, 1945, 40: 239–257.

1. SUBJECTS: 170 piston ring inspectors.
2. TESTS: Ortho-Rater Vision Tests.
3. CRITERION: production ratings: A, B, C, or D; 53 per cent of total group were C or D. (This information from J. Tiffin: The use of visual

data as an aid to increase production and efficiency, American Academy of Ophthalmology and Otolaryngology, *Transactions*, January–February. 1944, 1–4.)

4. VALIDITY: percentage of A and B operators found at each test score level for near and far acuity, worse eye (approximate; read from graph).

Far acuity

TEST SCORE	PER CENT OF A AND B OPERATORS
1	30
2	28
3	25
4	24
5	21
6	28
7	38
8	58
9	61
10	70
11	78

Near acuity

TEST SCORE	PER CENT OF A AND B OPERATORS
1	24
2	22
3	20
4	18
5	23
6	32
7	42
8	49
9	56
10	64
11	87

Per cent of all operators and those meeting all visual standards who are rated A, B, C, and D (approximate; read from graph):

RATING	ALL OPERATORS	THOSE MEETING STANDARDS
A	25%	37%
B	29	35
C	32	15
D	15	8

5. RELIABILITY: not given.

357a

TIFFIN, J., and WIRT, S. E.: Determining visual standards for industrial jobs by statistical methods. American Academy of Ophthalmology and Otolaryngology, *Transactions*, November–December, 1945, 4–25.

1. SUBJECTS: 72 electric solderers of eyeglass frames.
2. TESTS: Ortho-Rater Vision Tests.
3. CRITERION: average hourly earnings.
4. VALIDITY: comparison of near binocular acuity scores and criterion:

AVERAGE HOURLY EARNINGS	SCORE									TOTAL
	7	8	9	10	11	12	13	14	15	
$1.00–$1.09			1	1	1					3
.90– .99			2	3	12	3				20
.80– .89			2	4	3	4			1	14
.70– .79		3	3	6	3	3				18
.60– .69			2	1	2		1			6
.50– .59			1		2					3
.40– .49	1		1		4					6
.30– .39				1						1
.20– .29					1					1
Total	1	3	12	16	28	10	1	0	1	72

In group earning 80 cents an hour, only 4 of 38 failed to meet all visual standards; in group earning less than 80 cents an hour, 18 of 35 failed to meet all standards. Average earnings of those who failed to meet the visual standards: $0.69 per hour; average earnings of those who met all the standards: $0.83 per hour.

5. RELIABILITY: not given.

357b

TIFFIN, J., and WIRT, S. E.: Determining visual standards for industrial jobs by statistical methods. American Academy of Ophthalmology and Otolaryngology, *Transactions*, November–December 1945, 4–25.

1. SUBJECTS: 225 radio tube assemblers.
2. TESTS: Ortho-Rater Vision Tests.
3. CRITERION: rating by superiors.
4. VALIDITY: per cent of assemblers rated A at each near and far binocular acuity test score (figures approximate; read from rough graph):

Near binocular acuity score	8	9	10	11	12	13
Per cent rated A	20	25	45	62	72	80
Far binocular acuity score	6	7	8	9	10	11
Per cent rated A	58	60	58	45	50	53

5. RELIABILITY: not given.

357c

TIFFIN, J., and WIRT, S. E.: Determining visual standards for industrial jobs by statistical methods. American Academy of Ophthalmology and Otolaryngology, *Transactions*, November–December, 1945, 4–25.

1. SUBJECTS: 177 gaugers (gauging metal parts with reed gauge).
2. TESTS: Ortho-Rater Vision Tests.
3. CRITERION: rating on production (no further information).
4. VALIDITY: comparison of average production rating for each near acuity test score (worse eye):

Score	4	5	6	7	8	9	10	11	12
Average production rating*	1.5	2.8	3.0	3.7	3.2	3.1	3.2	3.5	3.3

* Approximate; read from rough graph.

5. RELIABILITY: not given.

357d

Tiffin, J., and Wirt, S. E.: Determining visual standards for industrial jobs by statistical methods. American Academy of Ophthalmology and Otolaryngology, *Transactions*, November–December, 1945, 4–25.

1. subjects: 199 hosiery loopers.
2. tests: Ortho-Rater Vision Tests.
3. criterion: hourly production in dozens of pairs (no further information).
4. validity: average hourly production at each far binocular acuity score (approximate; read from rough graph):

Score	4	6	8	10	12	14	16	18
Average hourly production	4.0	3.7	3.5	3.3	3.2	2.9	2.7	2.5

5. reliability: not given.

357e

Tiffin, J., and Wirt, S. E.: Determining visual standards for industrial jobs by statistical methods. American Academy of Ophthalmology and Otolaryngology, *Transactions*, November–December, 1945, 4–25.

1. subjects: 95 miliing machine operators.
2. tests: Ortho-Rater Vision Tests.
3. criterion: rating by superiors.
4. validity: per cent of high-rated operators at each test score (vertical phoria):

Score	2	3	4	5	6	7
Per cent of high-rated Operators*	20	33	45	55	56	57

* Approximate; read from rough graph.

5. reliability: not given.

358

WIRT, S. E., and LEEDKE, H. H.: Skillful eyes prevent accidents. *Annual News Letter*, Industrial Nursing Section, National Safety Council, November, 1945, 10–12.

1. SUBJECTS: (a) 104 paper machine operators, (b) 94 millwrights and other tradesmen in a paper mill.
2. TESTS: Ortho-Rater Vision Tests.
3. CRITERION: number of serious accidents the previous year.
4. VALIDITY: Group a: comparison of number having one or more serious accidents with those having no serious accidents in terms of meeting all major visual standards:

	SERIOUS-ACCIDENT GROUP	NO-SERIOUS-ACCIDENT GROUP	TOTAL
Meeting all major standards	22	37	59
Not meeting all major standards	30	15	45
Total	52	52	104

Group b: comparison of serious-accident group with no-serious-accident group:

	2 OR MORE SERIOUS ACCIDENTS	NO SERIOUS ACCIDENTS	TOTAL
Meeting all visual standards	30	17	47
Not meeting all visual standards	38	9	47
Total	68	26	94

5. RELIABILITY: not given.

359

ANON.: *The value and use of the Aptitude Index*. Hartford, Conn.: Life Insurance Agency Management Association, 1946. Pp. 24.

1. SUBJECTS: 924 full-time life insurance agents in 32 companies.
2. TESTS: Aptitude Index (rating chart for personal history and test of personality characteristics); 5 grades: A (excellent) through E (poor).
3. CRITERION: survival and first year's production.
4. VALIDITY: comparison of test grades and criteria: chance of survival of A men is 5 times as great as that of E men. Average first-year sales of A men are more than twice as high as those of E men.

   Total first-year production of survivors per 100 new agents hired, excluding production of terminators:

A	200%
B	124
C	71
D	41
E	18
All groups	100

5. RELIABILITY: not given.

360

CHAPPLE, E. D., and DONALD, G., JR.: A method for evaluating supervisory personnel. *Harvard Business Review*, 1945–46, 24: 197–214..

1. SUBJECTS: 40 supervisory employees, line executives, each with a substantial number of subordinates (one company).
2. TESTS: Interaction Chronograph.
3. CRITERION: rating by works manager and his assistant on "analytical ability," "personal requirements," "supervisory ability," and "initiative," used to divide group into 3: good, medium, and poor (each containing ⅓ of the S's); or over-all ratings used to divide group into 4: A, B, C, and D.

4. VALIDITY: per cent of each criterion category selected by placing critical score at "upper end" of test score range.

Rating for "initiative"

GROUP	PER CENT SELECTED
Good	80
Medium	14
Poor	0

Over-all rating

GROUP	PER CENT SELECTED
A	92
B	50
C	20
D	0

Comparison of test scores of 26 pairs of superior officials and their subordinate officials:

ITEM	PER CENT OF SUPERIOR OFFICIALS SHOWING TRAIT
Higher activity	92
Higher percentage of time active	92
Higher activity in 1st part of interview	92
Higher initiative-dominance values for whole interview	85
Quicker in responding	73

5. RELIABILITY: not given.

361

DAWES, H.: Selecting solicitors scientifically. *Railway Age*, 1946 (June 15), 120: 1181–1182, supplemented by personal communication.

1. SUBJECTS: 61 freight solicitors (salesmen) for a railroad.
2. TESTS: (1) personal data (5 final items are: height, holding life insurance, willingness to move, earned part of schooling expense, and previous selling other than solicitation), (2) Adaptability Test (Tiffin and Lawshe),

(3) Guilford-Martin Personnel Inventory, (4) Bernreuter Personality Inventory, (5) Kuder Preference Record.

3. CRITERION: ratings by supervisors on a 5-point scale, but group divided into three: A (above average), B (average), and C (below average).

4. VALIDITY: correlation of test scores and criterion:

TEST	*N*	CORRELATION	P.E.
1	61	.66*	07
2	16	−.08	
3	15	"No relationship"	
4	55	.03	
4	26	.44†	
5—items 5 and 8 only	25	.63	
5	25	.08	
1 and 5	21	.72	
1 and 5	25	.66	
1, 5: items 5 and 8	20	.75	
4: scales B1N and B4D	24	.64	

* Corrected in manuscript from .41 given in published article.

† Elimination of all over 50 years of age, all new men, and one other.

Percentage of each criterion group passing a critical score:

TEST	CRITICAL SCORE	PER CENT PASSING		
		GROUP a	GROUP b	GROUP c
1	140	88	54	17

5. RELIABILITY: correlation of ratings of various supervisors: .58, .43, .69, .65, .76, .98.

362

FILE, Q. W., and REMMERS, H. H.: Studies in supervisory evaluation. *Journal of Applied Psychology*, 1946, 30: 421–425.

1. SUBJECTS: 3 groups: (a) 60 workers in an office machine manufacturing company (46 supervisors, 14 nonsupervisors), (b) 40 workers in a

surgical supplies manufacturing company (20 supervisors, 20 nonsupervisors), (c) 16 supervisors in a large laundry.

2. TESTS: "How Supervise?", Revised Edition.

3. CRITERION: Group a: division into 2 groups: successful supervisors ($N = 46$) and those not promoted because of judged lack of ability ($N = 14$).

   Group b: division of group into 2: 20 successful supervisors, 20 who could not become supervisors, as judged by the Supervisor of Testing.

   Group c: division into 5 groups, 1 to 5: 1 = superior, 5 = can be given only the most limited responsibilities of supervisory nature. Not stated who made the ratings.

4. VALIDITY: Group a: comparison of test scores of successful supervisors and nonsupervisors:

	SUPERVISORS	NONSUPERVISORS
Per cent above 50th percentile	80	15
Per cent below 50th percentile	20	85
Critical ratio	5.8	

   Group b: comparison of test scores of successful supervisors and nonsupervisors:

	SUPERVISORS	NONSUPERVISORS
Mean	54	38
σ	9	11
Critical ratio	4.4	

   Group c: average raw score for each group:

"GROUP"	N	AVERAGE RAW SCORE
1 (best)	6	54.7
2	3	49.7
3	3	44.7
4	2	40.0
5 (worst)	2	32.0

5. RELIABILITY: not given.

363

FLEMMING, E. G., and FLEMMING, C. W.: A qualitative approach to the problem of improving selection of salesmen by psychological tests. *Journal of Psychology*, 1946, 21: 127–150.

1. SUBJECTS: 583 salesmen of 12 companies, various types.
2. TESTS: (1) Bernreuter Personality Inventory, (2) Moss Social Intelligence Scale, (3) Washburne Social Adjustment Inventory, (4) Otis Self-administering Test of Mental Ability, higher form, (5) Canfield Test of Sales Knowledge, (6) Strong Vocational Interest Blank. Pattern of test score "interpreted" for specific selling job.
3. CRITERION: rating by superiors as satisfactory or not satisfactory.
4. VALIDITY: per cent "correctly placed" by the tests (tetrachoric correlations in some cases):
    - *a*. 50 salesmen of office supplies: 68 per cent; tetrachoric correlation: .57.
    - *b*. 17 salesmen: 82 per cent; tetrachoric correlation: .95.
    - *c*. 348 salesmen: 73 per cent; tetrachoric correlation: .49.
    - *d*. 17 applicants: of the 10 recommended, the 9 still on the job were satisfactory; of the 7 not recommended, 5 had left as failures.
    - *e*. 47 salesmen in a chemical company: 89 per cent.
    - *f*. 18 salesmen of fertilizers: 83 per cent.
    - *g*. 20 salesmen to retail stores: 80 per cent.
    - *h*. 100 direct-to-consumer salesmen: 80 per cent.
    - *i*. 33 salesmen of chemicals: 80 per cent.
5. RELIABILITY: not given.

364

GHISELLI, E. E., BROWN, C. W., and MINIUM, E. W.: *The use of test scores for the prediction of accidents of streetcar motormen*. Unpublished report to the Municipal Railroad of San Francisco, 1946.

1. SUBJECTS: 3 groups of streetcar motormen: (a) subjects with 1 to 2 years' experience on job ($N = 53$), (b) subjects with 3 to 10 years'

experience ($N = 53$), (c) subjects with 15 to 30 years' experience ($N = 47$).

2. TESTS: (a) paper and pencil: 1—tapping, 2—dotting, 3—general mechanical principles, 4—judgment of distance through perspective, 5—judgment of linear distance; (b) apparatus tests: 6—visual acuity, 7—field of vision, 8—glare recovery, 9—distance judgment, 10—foot reaction-time, 11—steadiness.
3. CRITERION: accidents for an 8-month period.
4. VALIDITY: correlation (tetrachoric) of test scores and criterion:

TEST	CORRELATION		
	GROUP a	GROUP b	GROUP c
1	.62	.13	.40
2	.42	.03	.24
3	.13	.16	.22
4	.33	−.21	.42
5	.15	.03	.25
6	−.10	−.02	.22
7	−.02	−.05	.22
8	.12	−.35	.05
9	.07	.07	.25
10	.27	.42	.02
11	.47	−.22	−.30

5. RELIABILITY: reliability of criterion: odd vs. even months, corrected by Spearman-Brown formula:

GROUP	CORRELATION
a	.50
b	.75
c	.75

365

GOODMAN, C. H.: The MacQuarrie Test for Mechanical Ability: I. Selecting radio assembly operators. *Journal of Applied Psychology*, 1946, 30: 586–595.

1. SUBJECTS: 329 applicants for radio assembly work (female).
2. TESTS: MacQuarrie Test for Mechanical Ability.

3. CRITERION: rating by instructor at end of Vestibule Training School (3 days), based on job sample.
4. VALIDITY: correlation between test and criterion: r = .42 ± .03.

   Optimal combination of subtests gives a multiple correlation (*R*) of .46.
5. RELIABILITY: not given.

366

JONES, R. D.: The prediction of teaching efficiency from objective measures. *Journal of Experimental Education*, 1946–47, 15: 85–99.

1. SUBJECTS: 55 teachers.
2. TESTS: (1) University Grade Point Average, (2) High School Rank, (3) Henmon-Nelson Test of Mental Ability, (4) American Council on Education Cooperative English Test, C2, (5) American Council on Education Psychological Examination for College Freshmen, (6) American Council on Education Cooperative General Culture Test, (7) Bell Adjustment Inventory, (8) Link Inventory of Activities and Interests.
3. CRITERION: (1) rating by principal, using Wisconsin Adaptation, "M" Blank, (2) residual pupil gain ($N = 33$).
4. VALIDITY: multiple correlation of various measures and criteria: Criterion 1: Mean grade in Education 73, 74, and 75, Test 8, and combined 4-year grade point average: .45; Test 8, mean grade in Education 73, 74, and 75, High School Rank and Test 3: .49. Criterion 2: Test 7, part B, Test 7, Total, mean grade in Education 73, 74, and 75: .37; High School Rank, Test 6 and Test 7 (with a refinement of Criterion 2): .54.
5. RELIABILITY: correlation of Criterion 1 with Criterion 2: .10; correlation of Criterion 1 with Criterion 2 modified: −.28.

367a

LAWSHE, C. H., JR., SEMANEK, I. A., and TIFFIN, J.: The Purdue Mechanical Adaptability Test. *Journal of Applied Psychology*, 1946, 30: 442–453.

1. SUBJECTS: 14 ice company mechanics.
2. TESTS: Purdue Mechanical Adaptability Test.

3. CRITERION: ranking by supervisor.
4. VALIDITY: correlation of test score and criterion: Rho = .86; standard error = .07.
5. RELIABILITY: not given.

367b

LAWSHE, C. H., JR., SEMANEK, I. A., and TIFFIN, J.: The Purdue Mechanical Adaptability Test. *Journal of Applied Psychology*, 1946, 30: 442–453.

1. SUBJECTS: 6 time study men.
2. TESTS: Purdue Mechanical Adaptability Test.
3. CRITERION: ranking by supervisor.
4. VALIDITY: correlation of test score and criterion: Rho = .75; standard error = .18.
5. RELIABILITY: not given.

367c

LAWSHE, C. H., JR., SEMANEK, I. A., and TIFFIN, J.: The Purdue Mechanical Adaptability Test. *Journal of Applied Psychology*, 1946, 30: 442–453.

1. SUBJECTS: 12 foundry workers.
2. TESTS: Purdue Mechanical Adaptability Test.
3. CRITERION: rating by foreman.
4. VALIDITY: with the critical score set at 70, the one employee rated "poor" and 2 of the "fair to good" class are eliminated, but all those rated "very good" retained.
5. RELIABILITY: not given.

367d

LAWSHE, C. H., JR., SEMANEK, I. A., and TIFFIN, J.: The Purdue Mechanical Adaptability Test. *Journal of Applied Psychology*, 1946, 30: 442–453.

1. SUBJECTS: 46 machine operators in a screw manufacturing company.
2. TESTS: Purdue Mechanical Adaptability Test.

3. CRITERION: rating (not stated by whom); lowest rating: 5.0; highest rating: 19.5.
4. VALIDITY: per cent rated "high" (rated 13.5 or better) of the group passing the test with the critical score placed at various points:

CRITICAL SCORE	PER CENT RATED "HIGH"
75	44
85	48
95	64

Per cent rated high in the total group: 37.

5. RELIABILITY: not given.

368

LINS, L. J.: The prediction of teaching efficiency. *Journal of Experimental Education*, 1946–47, 15: 2–60.

1. SUBJECTS: 58 first-year teachers, female, graduates of University of Wisconsin School of Education in 1943 (part of a larger group).
2. TESTS: 20 tests, including: (1) Henmon-Nelson Test of Mental Ability, Form C, (2) personal data, (3) educational data, (4) American Council on Education Psychological Examination, (5) National Teachers Examination, (6) various achievement tests, (7) various ratings by School of Education staff.
3. CRITERION: (1) composite of ratings by 5 superiors as to teaching efficiency, using the M-Blank, Data for Individual Staff Members, 1940 edition, and the Cooperative Study of Secondary School Standards, (2) rating by pupils, (3) pupil gains.
4. VALIDITY: (1) multiple correlation of Criterion 1 with 5 variables [(a) prediction of teaching efficiency from objective data by a staff member, (b) composite of 2 interview ratings by staff members as to general impressions, (c) rating in ability in the assigned activity in Education 73, (d) prediction of teaching efficiency by the major department, (e) composite of evaluations of teaching situation by 2 staff members]: .68.

   (2) multiple correlation of Criterion 2 with 7 variables [(a) composite evaluations by 2 staff members of the teaching situation, (b) composite

of high school and college percentile scores for Test 1, (c) American Council on Education Cooperative English Test, Test C2: Reading Comprehension (Higher Level), Form Q, (d) American Council on Education Cooperative General Culture Test, Revised Series, Form Q, (e) American Council on Education Cooperative English Test, Form 1937, (f) prediction of teaching efficiency by a staff member from personal data, (g) interview ratings by staff members as to general impressions]: .65.

(3) multiple correlation ($N = 17$) of Criterion 3 with 6 variables [(a) high school rank, (b) interview ratings by staff as to general impressions, (c) prediction as to probable success by major department, (d) composite of ratings in assigned activities in Education 73 and 74, (e) composite of 2 practice teaching grades, (f) prediction of teaching efficiency from objective data by a staff member]: .98.

5. RELIABILITY: Criterion 1: range of correlations (product moment) of individual ratings with composite: .72 to .88.

   Intercorrelations of the 3 criteria:

$r_{1.2}$	.28
$r_{1.3}$	.19
$r_{2.3}$	.06

369

MANDELL, M. M., and ADKINS, D. C.: The validity of written tests for the selection of administrative personnel. *Educational and Psychological Measurement*, 1946, 6: 293–312.

1. SUBJECTS: 3 groups: (a) top management, $N = 20$; (b) staff, $N = 63$; (c) technical group (predicted administrative performance), $N = 90$; all these in Federal Government.
2. TESTS: (1) American Council on Education: Psychological Examination, (2) Current Events, (3) Interpretation of Data, (4) Estimating Test, (5) Administrative Judgment, (6) Agency Organization and Personnel, (7) Scale of Values, Civil Service Revision.
3. CRITERION: graphic ratings, paired comparisons, and salary with age constant.
4. VALIDITY: Group a: correlations between graphic ratings and test scores:

TEST	r
1	.64
2	.64
3	.65
4	.10
5	.68
6	.66 ($N = 14$)

Group b: multiple corrélation, first 5 tests and salary: .68; multiple correlation, first 5 tests and combined ratings: .55.

Group c: correlation between test scores and graphic rating and paired comparison:

TEST	r (GRAPHIC RATING) $N = 90$	r (PAIRED COMPARISON) $N = 69$
1	.39	.28
2	.25	.34
3	.32	.38
4	.07	.12
5	.27	.25

5. RELIABILITY: estimated reliability coefficients of tests range from .97 to .28. Correlation between the two types of rating for Group b = .65.

370

ROBERTS, W. H.: *Test scores and merit ratings for engineers.* Unpublished data, 1946.

1. SUBJECTS: 25 engineers, all types, in graduate training course in a large engineering company.
2. TESTS: (1) Wonderlic Personnel Test, (2) Kuder Preference Record.
3. CRITERION: merit ratings by director of training, given in 9 qualitative terms and converted to percentile ratings.
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	.01
2—Science	.22
2—Clerical..........	.37
2—Music	—.12

Setting critical scores on Test 1 at 25, Test 2—Science at 68, and Test 2—Clerical at 35 results in following recommendations:

RATINGS	*N*	REJECTED	EMPLOYED
Highest	4	0	4
Middle	9	2	7
Lowest	12	8	4

5. RELIABILITY: not given.

371a

RUCH, F. L.: *Final report on the establishment of personnel selection procedures at Allied Plastics of Los Angeles.* Unpublished, 1946.

1. SUBJECTS: 61 press operators, plastics manufacturing company.
2. TESTS: (1) hand dynamometer, (2) Ruch Standard Task 11 (Checking Numbers), (3) Ruch Standard Task 1 (Following Lines), (4) Ruch Standard Task 10 (Verbal Reaction), (5) Ruch Standard Task 8 (Making Gates).
3. CRITERION: pooled ratings of 2 supervisors, on basis of which the employee was designated as above or below average.
4. VALIDITY: per cent meeting standard (or critical) scores on test who are above average on ratings (Test 2 added to 1, 3 to 2, etc.):

TEST	CRITICAL SCORE	PER CENT OF TOTAL *N* MEETING STANDARD	PER CENT ABOVE AVERAGE	EFFICIENCY INDEX
1	40	86.9	51.0	1.04
2	38	69.0	57.2	1.50
3	5	59.0	63.9	2.09
4	6	54.0	66.7	2.44
5	67	44.3	70.5	3.17

5. RELIABILITY: not given.

371b

Ruch, F. L.: *Final report on the establishment of personnel selection procedures at Allied Plastics of Los Angeles.* Unpublished, 1946.

1. SUBJECTS: 47 finishers, plastics manufacturing company.
2. TESTS: (1) Ruch Standard Task 1 (Following Lines), (2) hand dynamometer, (3) Ruch Standard Task 4 (Dotting O's).
3. CRITERION: pooled ratings of 2 supervisors were used to classify S's as above or below average.
4. VALIDITY: per cent meeting critical scores on the tests who are above average on ratings (Test 2 added to 1, 3 to 2):

TEST	CRITICAL SCORE	PER CENT OF TOTAL *N* MEETING STANDARD	PER CENT ABOVE AVERAGE	EFFICIENCY INDEX
1	6	70.2	54.5	1.20
2	42	38.4	61.2	1.57
3	205	34.0	62.5	1.67

5. RELIABILITY: not given.

371c

Ruch, F. L.: *Final report on the establishment of personnel selection procedures at Allied Plastics of Los Angeles.* Unpublished, 1946.

1. SUBJECTS: 32 office employees (clerks).
2. TESTS: (1) Ruch Standard Task 11 (Checking Numbers), (2) Ruch Standard Task 7 (Verbal Logic), (3) Ruch Standard Task 6 (Number Patterns).
3. CRITERION: pooled ratings of 2 supervisors, on basis of which the employee was designated as above or below average.
4. VALIDITY: per cent meeting critical scores on the tests who are above average on ratings (Test 2 added to 1, 3 to 2):

TEST	CRITICAL SCORE	PER CENT OF TOTAL N MEETING STANDARD	PER CENT ABOVE AVERAGE	EFFICIENCY INDEX
1	67	69.0	63.7	1.75
2	5	56.3	66.7	2.00
3	12	50.0	69.0	2.20

5. RELIABILITY: not given.

371d

RUCH, F. L.: *Final report on the establishment of personnel selection procedures at Allied Plastics of Los Angeles.* Unpublished, 1946.

1. SUBJECTS: 23 inspectors, plastics manufacturing company.
2. TESTS: (1) hand dynamometer, (2) Ruch Standard Task 2 (Blocks), (3) Ruch Standard Task 1 (Following Lines).
3. CRITERION: pooled ratings of 2 supervisors, on basis of which the employee was designated as above or below average.
4. VALIDITY: per cent meeting critical scores on the tests who are above average on ratings (Test 2 added to Test 1, 3 to 2):

TEST	CRITICAL SCORE	PER CENT OF TOTAL N MEETING STANDARD	PER CENT ABOVE AVERAGE	EFFICIENCY INDEX
1	29	69.5	56.3	1.28
2	5	52.1	66.7	2.00
3	5	34.6	75.0	3.00

5. RELIABILITY: not given.

371e

RUCH, F. L.: *Final report on the establishment of personnel selection procedures at Allied Plastics of Los Angeles.* Unpublished, 1946.

1. SUBJECTS: 14 fabricators, plastics manufacturing company.
2. TESTS: (1) hand dynamometer, (2) Ruch Standard Task 4 (Dotting O's).

3. CRITERION: pooled ratings of 2 supervisors, on basis of which the employee was designated as above or below average.

4. VALIDITY: per cent meeting critical scores who are above average on ratings (Test 2 added to Test 1):

TEST	CRITICAL SCORE	PER CENT OF TOTAL N MEETING STANDARD	PER CENT ABOVE AVERAGE	EFFICIENCY INDEX
1	40	57.0	62.5	1.67
2	346	35.6	80.0	4.00

5. RELIABILITY: not given.

372

SARTAIN, A. Q.: Relation between scores on certain standard tests and supervisory success in an aircraft factory. *Journal of Applied Psychology*, 1946, 30: 328–332.

1. SUBJECTS: 3 groups: (a) 40 foremen and assistant foremen, (b) 85 foremen and assistant foremen, (c) 53 "supervisors."

2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) Tiffin and Lawshe Adaptability Test, Form A, (3) Revised Minnesota Paper Formboard, (4) Bennett Test of Mechanical Comprehension, Form AA, (5) "How Supervise?", Form A, Experimental Edition, (6) Bernreuter Personality Inventory, (7) Kuder Preference Record.

3. CRITERION: (a) ratings by 2 superiors on 2 rating forms of supervisory success; a combination of these 4 ratings, (b) same as Group a, (c) division into Good ($N = 29$) and Poor ($N = 24$) supervisors by 3 managers.

4. VALIDITY: Group a: correlation of test scores and criterion:

TEST	r	TEST	r
1	.04	6—B4-D	.12
2	−.07	6—Fl-C	.01
3	.10	6—F2-S	.07
4	−.15	7—Mech.	.00
5	−.18	7—Soc.Ser.	−.06
6—Bl-N	−.11	7—Cler.	.00

Group b: correlation of test scores and criterion:

TEST	*r*
1	.16
6—Bl-N	−.12
6—B4-D	.04
6—Fl-C	−.09
6—F2-S	−.02

Group c: comparison of test scores of good and poor supervisors:

TEST	POOR GROUP, MEAN	GOOD GROUP, MEAN	CRITICAL RATIO
6—Bl-N	−127.1	−146.4	1.29
6—B4-D	85.6	108.3	1.39
6—Fl-C	− 95.0	−109.3	0.82
6—F2-S	− 36.5	− 38.8	0.17
1	101.1	105.1	1.22

5. RELIABILITY: Group a:

Average rating on Form A correlated with average rating on Form B: $r = .79$

First rating on Form A correlated with first rating on Form B: $r = .77$

Second rating on Form A correlated with second rating on Form B: $r = .62$

First rating on Form A correlated with second rating on Form B: $r = .54$

Second rating on Form A correlated with first rating on Form B: $r = .48$

373

SCHULTZ, R. S.: First steps in learning how to use aptitude tests for salesmen. *Sales Management*, 1946 (January), 56: 113, 116, 118.

1. SUBJECTS: 32 pharmaceutical salesmen.
2. TESTS: (1) Strong Vocational Interest Blank, (2) Bernreuter Personality Inventory.
3. CRITERION: (1) amount of sales, (2) collections record.
4. VALIDITY: comparison of high, average, and low criterion-score men in terms of general comments about test scores:

	N	TEST 1	TEST 2
Criterion 1:			
High	9	Largest percentage of agreement in interest with life insurance salesmen	More self-sufficient than low group
Average	12		
Low	10	No clear definition of interests	50% received unfavorable scores
Criterion 2:			
High	11	Similar to real estate and life insurance salesmen	75% received A or B scores
Average	11	No clear differentiation	91% received A or B scores
Low	10	No clear differentiation	40% received A scores; 60% received unfavorable scores

5. RELIABILITY: not given.

374

SEAGOE, M. V.: Prediction of in-service success in teaching. *Journal of Educational Research*, 1945–46, 39: 658–663.

1. SUBJECTS: 25 teachers, female (out of an original group of 125), two years' teaching experience. (Tested as college juniors.)
2. TESTS: (1) MacQuarrie Test for Mechanical Ability, (2) Meier Art Judgment Test, (3) Seashore Test of Musical Talent, (4) American Council on Education Psychological Examination, (5) American Council on Education Cooperative General Achievement Test in Mathematics, (6) American Council on Education Achievement Test in Natural Science, (7) American Council on Education Cooperative General Achievement Test in Social Studies, (8) American Council on Education Cooperative Contemporary Affairs Test, 1941, (9) American Council on Education Cooperative General Culture Test, (10) Humm-Wadsworth Temperament Scale, (11) Bell Adjustment Inventory, (12) Bernreuter Personality Inventory, (13) Thurstone Personality Schedule, (14) Willoughby Emotional Maturity Scale, (15) Strong Vocational Interest Blank, (16) Allport-Vernon Study of Values, (17) Harper Test of Social Attitudes, (18) Morris Trait Index L,

(19) Coxe-Orleans Teaching Prognosis, (20) George Washington University Teaching Aptitude Test, (21) Stanford Educational Aptitude Test.

3. CRITERION: rank in total faculty, ranking by superior.
4. VALIDITY: correlation (rank order) of rank and test scores:

TEST	CORRELATION	P.E.
1	−.01	.14
2	.07	.14
3	−.05	.14
4	.10	.14
5	−.08	.20
6	−.24	.13
7	.13	.14
8	.12	.14
9	.01	.14
10—qualitative estimate	.65	.14
10—No count	.52	.10
11	−.31	.13
12—Fl-C	−.30	.13
12—F2-S	−.26	.13
13	−.55	.10
14	.02	.14
15—M-F	.08	.14
16—economics	.03	.14
16—political	.14	.14
16—aesthetic	.26	.13
16—social	−.23	.13
16—religious	−.08	.14
16—theoretical	−.16	.14
17	.04	.14
15—teacher, elementary	−.08	.14
15—housewife	−.08	.14
18	.00	.14
19	.01	.14
20	−.19	.14
21—A-R	.02	.14
21—T-R	.14	.14
21—T-A	.04	.14

5. RELIABILITY: correlation of ranking and rating on University of California Rating Scale for Practice Teaching by same supervisor: .66 ± .09.

375

VON HADEN, H. I.: An evaluation of certain types of personal data employed in the prediction of teaching efficiency. *Journal of Experimental Education*, 1946–47, 15: 61–84.

1. SUBJECTS: 58 first-year teachers, female. (Same data as in L. J. Lins: *Journal of Experimental Education*, 1946–47, 15: 2–60.)
2. TESTS: (1) ratings of difficulty of teaching situation, (2) composite of interviews with School of Education staff members, (3) composite of ratings of autobiographies, (4) ratings of interviewers' comments, (5) ratings of initiative from interview data, (6) ratings of professional judgment from interview data.
3. CRITERION: (1) composite of supervisors' ratings, using the M–Blank, (2) pupils' ratings, (3) pupil gains ($N = 17$).
4. VALIDITY: multiple correlation of "test" ratings and criteria:

CRITERION	CORRELATION
1	.72
2	.46
3	.44

5. RELIABILITY: Criterion 1: correlations of individual rating with composite ratings, range: .72 to .88.

Intercorrelations of the 3 criteria:

$r_{1.2}$	.28
$r_{1.3}$	.19
$r_{2.3}$	.06

376

WAITS, J. V.: The use of the American Transit Motor Ability Test in the selection of bus and streetcar operators. *Proceedings*, Highway Research Board, National Research Council, 1946, 26: 340–353.

1. SUBJECTS: (a) 199 streetcar operators, (b) 91 bus drivers (includes all those employed between July 1, 1945, and December 31, 1945).

2. TESTS: American Transit Motor Ability Test.
3. CRITERION: (1) accident responsibility rate per 100,000 hours of operation (criterion period: from date of employment to April 1, 1946), (2) rating by superiors on over-all desirability as an employee.
4. VALIDITY: correlation of test scores and criterion: Criterion 1, original scoring key:

GROUP	*N*	PRODUCT–MOMENT CORRELATION
a	199	−.14
b	91	−.19
a plus b	290	−.14

Criterion 1, revised scoring key:

GROUP	*N*	PRODUCT–MOMENT CORRELATION
a	199	−.29
b	91	−.43
a plus b	290	−.33

Criterion 1, revised scoring key:

GROUP	*N*	BISERIAL CORRELATION
a	199	−.48
b	91	−.62
a plus b	290	.54

Product-moment correlation, Criterion 2, original scoring key: Groups a plus b: .05; Criterion 2, revised scoring key: Groups a plus b: .09.

Comparison of test scores of better-than-average and worse-than-average drivers:

	Test Score					
	GROUP a			GROUP b		
Accident responsibility rate	0–49	50–64	65–119	0–49	50–64	65–119
Better than average	34	33	50	8	14	32
Worse than average	40	30	12	21	10	6

5. RELIABILITY: not given for either criterion. Correlation of accident responsibility rate with supervisor's rating: .48.

377

WALKER, K. F., and OXLADE, M. M.: A tentative battery of tests for the selection of women for cotton textile spinning. *Bulletin of Industrial Psychology and Personnel Practice* (Department of Labor and National Service, Industrial Welfare Division, Commonwealth of Australia), June, 1946, 8–27.

1. SUBJECTS: 67 women cotton operatives (25 winders, 17 spinners, 11 intermediate rovers and rovers, 10 doffers, 4 slubbers); 2 months' to 20 years' experience; 52 had at least 18 months' experience.
2. TESTS: (1) Placing Test (modification of Minnesota Rate of Manipulation Test: Placing), (2) Turning Test (modification of Minnesota Rate of Manipulation Test: Turning), (3) Spinning Board Test (modification of the pegboard used at Pacific Mills by Bateman), (4) Detroit Manual Ability Test, (5) Lacing Board Test (modification of Cox's Eye Board Test), (6) Minnesota Paper Formboard, Australian Edition, (7) Otis Self-administering Test of Mental Ability, Higher Form, Australian Council for Education Research Adaptation.
3. CRITERION: rating by 6 foremen on 3-point scale:

	N	PER CENT
A—"Very good"	21	31.4
B—"Good"	20	29.8
C—"Average or below"	26	38.8

4. VALIDITY: critical ratios of the mean differences between the test scores of various groups (A had higher mean scores than B, B higher than C):

TEST	GROUPS			
	A vs. B	AB vs. C	B vs. C	A vs. C
4	1.42	3.11	1.87	3.5
5	3.04	3.3	1.5	4.5
1	2.7	2.5	2.2	4.0
2	0.26	3.1	2.6	3.2
3	0.90	3.0	2.1	3.0

Tests 6 and 7 showed no statistically significant differences. Differences and critical ratios for mean total standard scores on Tests 1 to 5 for various groups:

GROUP	DIFFERENCE BETWEEN MEANS	C.R.
A vs. B	1.73	1.85
B vs. C	2.66	2.75
A vs. C	4.39	4.2
AB vs. C	3.55	3.9

Age differences between groups found not significant, but experience differences were significant in all cases except between Groups B and C.

5. RELIABILITY: significance of differences between mean production of the groups:

GROUP	DIFFERENCE BETWEEN MEANS	C.R.
A vs. B	15.2	3.0
A vs. C	18.3	3.9
A plus B vs. C	10.1	3.04

378

ANDERSON, R. G.: Test scores and efficiency ratings of machinists. *Journal of Applied Psychology*, 1947, 31: 377–388.

1. SUBJECTS: 174 machinists (several types).
2. TESTS: (1) Adult Placement Test (Anderson), (2) Bennett Mechanical Comprehension Test, Form AA, (3) Revised Minnesota Paper Form-board, (4) MacQuarrie Mechanical Aptitude Test, (5) a job knowledge test, (6) a pencil block test.
3. CRITERION: independent ratings (later reconciled if necessary) by supervisor and assistant supervisor on 4 traits (quality and quantity of work, job knowledge, and cooperative attitude; 6-point scale) combined into a composite criterion.

4. VALIDITY: correlation (product moment) between test scores and criterion:

TEST	*N*	CORRELATION	P.E.
1—total score	174	.40	.04
1—number score	174	.28	.05
1—verbal score	174	.16	.05
2	174	.21	.05
3	174	.22	.05
4—subtests 1–3	149	.15	.05
4—subtests 4–5	149	.17	.05
4—total	149	.06	.06
5	119	.21	.06
6	120	.31	.06

5. RELIABILITY: not given.

379

BROWN, C. W., and GHISELLI, E. E.: Factors related to the proficiency of motor coach operators. *Journal of Applied Psychology*, 1947, 31: 477–479.

1. SUBJECTS: 363 applicants accepted for employment as bus drivers, 2 groups: (a) 247 who reported for duty, (b) 116 who were hired but never reported.
2. TESTS: (1) an intelligence test, (2) personal data.
3. CRITERION: (1) accident rate per month on the job (records available for 20 months), (2) months on the job, (3) failure to report for duty after hiring.
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION	
	CRITERION 1	CRITERION 2
Intelligence test	—.05	.09
Years of schooling	—.01	.04
Age at hiring	—.01	.21

Biserial correlation between Test 1 and Criterion 3: .23.

5. RELIABILITY: estimate of reliability obtained from correlation of collision and non-collision accidents: .25.

380

CASE, H. W.: Selection of aircraft engineering draftsmen and designers. *Journal of Applied Psychology*, 1947, 31: 583–588.

1. SUBJECTS: 2 groups: (a) 150 engineering draftsmen, (b) 111 engineering designers; some overlap between the two groups; Aircraft company.
2. TESTS: (1) Otis Self-administering Test of Mental Ability, (2) Case-Ruch Survey of Spatial Relations Ability.
3. CRITERION: rating by supervisor, 5-point scale. Ratings on the two jobs done 6 months apart.
4. VALIDITY: correlations between tests and criterion:

TEST	GROUP a		GROUP b	
	r	STANDARD ERROR	*r*	STANDARD ERROR
1	.23	.08	.41	.08
2	.54	.06	.75	.04

5. RELIABILITY: no real measure of reliability of criterion given. Correlation (*r*) of the two sets of ratings, which were designed to be as different as possible, was .52, standard error, .07.

381

CHAPPLE, E. D., and DONALD, G., JR.: An evaluation of department store salespeople by the interaction chronograph. *Journal of Marketing*, 1947–48, 12: 173–185.

1. SUBJECTS: 154 salespeople, department store (who had worked 200 days or more).
2. TESTS: Interaction Chronograph, with standard interview.
3. CRITERION: average daily sales; comparisons only within a department.

4. VALIDITY: comparison of average daily sales against "mean activity" (on Interaction Chronograph) in each department gave agreement of the 2 rank orders in 75 per cent of the cases.

   Relation of 6 variables (on Interaction Chronograph) to absolute sales rank order, gave 93 per cent agreement.

   Different characteristics required in different departments: top salespeople in each department ($N = 15$) compared: do not have similar characteristics except: (1) mean activity rates of at least 9 seconds, (2) great range in values in each of the variables for the different periods of the interview (lack of rigidity).

5. RELIABILITY: not given.

382

COOK, W. W., and LEEDS, C. H.: Measuring the teaching personality. *Educational and Psychological Measurement*, 1947, 7: 399–410.

1. SUBJECTS: 100 teachers, grades 4 to 6.
2. TESTS: The Teacher-Pupil Inventory.
3. CRITERION: Three criteria: (1) principal's rating, (2) expert's rating, based on classroom visit, (3) pupils' ratings of the teacher.
4. VALIDITY: correlation between score on inventory and criteria:

CRITERION	CORRELATION
1	.45
2	.49
3	.46
All 3	.60

5. RELIABILITY:

Reliability of Criterion 1 (split-half): .87
Reliability of Criterion 2 (split-half): .92
Reliability of Criterion 3 (2 groups of raters): .93
Correlation of Criteria 1 and 2: .48
Correlation of Criteria 1 and 3: .39
Correlation of Criteria 2 and 3: .33
Reliability of Inventory (split-half): .89

383

EKBERG, D. L.: A study in tool usage. *Educational and Psychological Measurement*, 1947, 7: 421–427.

1. SUBJECTS: 4 groups: (a) 40, (b) 36, (c) 15, (d) 9, mechanical workers in a business machine company (probably assemblers).
2. TESTS: (1) Benge Basic Employment Test (intelligence), (2) Screwboard No. 1.
3. CRITERION: pooled rankings of 3 foremen as to general effectiveness on the job.
4. VALIDITY: correlation (rho) between test scores and criterion:

TEST	RHO			
	GROUP a	GROUP b	GROUP c	GROUP d
1	.23 ± .11	.08 ± ?	—	—
2	.49 ± .08	.26 ± .11	.13 ± .18	.68 ± .13

Mean score for 37 most efficient of groups a and b is 1.07 sigma above mean for group of 652 industrial applicants.

5. RELIABILITY: reliability of rankings not given.
Reliability of test (split-half): .89.
Correlation of test with age: .33 ± .04.

384

GOODMAN, C. H.: The MacQuarrie Test for Mechanical Ability: III. Follow-up study. *Journal of Applied Psychology*, 1947, 31: 502–510.

1. SUBJECTS: 329 radio assemblers (female).
2. TESTS: MacQuarrie Test for Mechanical Ability.
3. CRITERION: (1) termination, (2) foremen's ratings, 5 months after last employee hired.
4. VALIDITY: comparison of mean test scores for those still employed and those terminated:

GROUP	*N*	MEAN TEST SCORE	SIGMA	C.R.
Total	329	46.8	12.0	
Still employed	136	43.8	11.7	
				2.99
All terminees	193	47.7	12.3	
				3.01
Discharged for cause	29	40.3	11.8	
				2.53
Unsatisfactory workers	28	48.4	11.9	

Comparison of those terminated and those still employed among those scoring above and below 55 on test:

	ABOVE 55		BELOW 55	
	N	% OF GROUP	*N*	% OF GROUP
Still employed	35	35.7	101	43.7
Terminated	63	64.3	130	56.3
Total	98	100.0	231	100.0

Comparison of those rated satisfactory and unsatisfactory and those discharged, among those scoring above and below 55 on test:

	ABOVE 55		BELOW 55	
	N	% OF GROUP	*N*	% OF GROUP
Satisfactory	51	52.0	86	37.2
Unsatisfactory	9	9.2	18	7.8
Discharged	3	3.1	26	11.3
Total	63	64.3	130	56.3
Total satisfactory (working and terminated)	86	87.7	187	80.8

5. RELIABILITY: not given.

385

GOULD, C.: The predictive value of certain selective measures. *Educational Administration and Supervision*, 1947, 33: 208–212.

1. SUBJECTS: 92 to 113 teachers (1st year), School of Education graduates (out of a total of 128 in graduating class).

2. TESTS: (1) grade in student-teaching, (2) rating in personal interview with faculty, (3) ACE Psychological Examination, (4) quality point average, 1st 3 semesters, (5) Cooperative Contemporary Affairs Test, (6) Bell Adjustment Inventory, (7) Washburne Social Adjustment Inventory, (8) Willoughby Personality Schedule.

3. CRITERION: rating by principal, 5 point scale (a number of items).

4. VALIDITY: contingency coefficient between test scores and criterion:

TEST	CONTINGENCY COEFFICIENT
1	.66
2	.64
3	.53
4	.44
5	.38
6	.37
7	.35
8	.23

5. RELIABILITY: not given.

386

HAY, E. N.: Postscript to predicting success in machine bookkeeping. *Journal of Applied Psychology*, 1947, 31: 235.

1. SUBJECTS: machine bookkeepers on the job one year or longer, $N = 26$ to 43.

2. TESTS: presumably the 2 test batteries said to be in use in 1943 article (*Journal of Applied Psychology*, 1943, 27: 483–493): (1) Army Alpha, Nebraska Revision, Number Series; Minnesota Vocational Test for Clerical Workers, Number Series; Fryer Name Finding Test, (2) Otis Self-administering Test of Mental Ability, Form B, 20-minute; Minnesota Vocational Test for Clerical Workers, Name and Number Series.

3. CRITERION: average production.

4. VALIDITY: comparison average production before and after introduction of testing program:

	N	AVERAGE PRODUCTION
Before testing program:		
Oct., 1937	43	105.0
Nov., 1939	40	108.7
Apr., 1940	30	109.7
Dec., 1940	32	110.2
Dec., 1941	26	110.9
After testing program:		
Dec., 1943	29	116.7
June, 1944	35	113.0
Dec., 1945	29	108.1
June, 1946	29	111.6

5. RELIABILITY: not given.

387

KEPHART, N. C.: Visual skills versus employee efficiency. *Iron Age*, 1947 (July 10), 160: 60–63.

1. SUBJECTS: 4 groups: (a) 125 machinists in a company producing heavy iron castings for ship building, (b) 100 grinders in a company manufacturing internal-combustion motors, (c) 30 punch press operators, (d) 133 forge shop employees.
2. TESTS: Ortho-Rater Vision Tests. (Article does not specify which tests were used in predicting.)
3. CRITERION: Group a: rating by supervisors into 2 groups, above and below average. Group b: per cent scrap produced in a 24-week period. Group c: production: per cent efficiency (average = 130%) over an 8-week period. Group d: number of visits to first-aid department over a 20-week period (range: 0 to 74).
4. VALIDITY: comparison of those having "adequate visual skills" (not further defined) and those having inadequate visual skills in terms of criterion scores:

GROUP	CRITERION	ADEQUATE VISION	INADEQUATE VISION
a	Above average	77%	24%
	Below average	23%	76%
	Total *N*	74	51
b	More than 5% scrap	22%	57%
	Less than 5% scrap	78%	43%
	Total *N*	70	30
c	Above average	65%	14%
	Below average	35%	86%
	Total *N*	23	7
d	6 visits or more	64%	86%
	Less than 6 visits	36%	14%
	Total *N*	70	63

5. RELIABILITY: not given.

388

MCCLURE, G. E.: *A study of the discriminative value of the Langley-Porter Clinic Revision of the Harrower-Erickson Multiple Choice Group Rorschach Test in the prediction of termination rate of public conveyance operators.* M.A. thesis, University of Southern California, 1947. Pp. 30.

1. SUBJECTS: 140 bus and streetcar operators (tested at application). (Some employees operated both kinds of vehicles.)
2. TESTS: Langley-Porter Revision of the Multiple Choice Group Rorschach Test.
3. CRITERION: on the job 3 months later, or terminated.
4. VALIDITY: comparison of on-the-job group (stable, $N = 77$) with terminee group ($N = 63$), on basis of responses to test. On basis of Rorschach variables only 2 of 32 possible differences were found to be significant at the 1 per cent level: "Space" ($CR = 2.9$), and "Z class," ($CR = 4.9$). On basis of item analysis, 2 responses of the 100 on the form gave differences significant at 1 per cent level: Blot No. 2, answer "nothing at all": t-ratio $= 2.70$; Blot No. 8, answer "blue flags": t-ratio $= 2.83$.
5. RELIABILITY: not given.

389

MAHER, H., and FIFE, I.: A biological-pharmaceutical checker selection program. *Journal of Applied Psychology*, 1947, 31: 469–476.

1. SUBJECTS: 39 biological-pharmaceutical checkers (out of a population of 45).
2. TESTS: (1) Thurstone Test of Mental Alertness, (2) Test BPC-1 (specially devised to measure distribution of attention), (3) Test BPC-2 (specially devised to measure attention under constant set), (4) Minnesota Vocational Test for Clerical Workers, (5) MacQuarrie Test for Mechanical Ability, (6) Pennsylvania Bi-manual Worksample.
3. CRITERION: ratings by supervisors converted into ranks, then into normalized per cent scores.
4. VALIDITY: correlation (product moment) of test scores and criterion:

TEST	CORRELATION
1—L score	.30
1—Q score	.38
1—G score	.35
2—(errors)	−.39
3—(errors)	−.36
4—Number Series	.13
4—Name Series	.26
6—Assembly (time)	−.03
6—Disassembly (time)	−.06
5—Tracing	.34
5—Tapping	.10
5—Dotting	.26
5—Copying	.34
5—Location	.23
5—Blocks	.33
5—Pursuit	.35
5—Total	.39

5. RELIABILITY: correlation of ratings with reratings after 10 weeks ($N = 40$): .86.

390

MANDELL, M. M.: The selection of foremen. *Educational and Psychological Measurement*, 1947, 7: 385–397.

1. SUBJECTS: 814 to 1195 foremen, 4 levels of supervision in Navy air stations, shipyards, etc., from a number of skilled trades (civilian employees). Results reported separately for 13 to 18 groups of different levels of supervision and different stations, but summarized here.
2. TESTS: (1) Supervisory Judgment, (2) Mechanical Principles, (3) Spatial Relations, (4) Rules and Regulations, (5) Reading Comprehension, (6) Numerical Relations, (7) Blueprint Reading.
3. CRITERION: ratings by supervisors and colleagues, graphic and rank order. 25 per cent of cases eliminated because of substantial disagreement between the 2 rating methods.
4. VALIDITY: correlation (Pearsonian) between test scores and ratings:

TEST	NO. OF GROUPS	RANGE OF r'S	LARGEST GROUP ($N = 171$)
1	13	.05 to .50	.18
2	18	−.10 to .53	.13
3	18	−.10 to .51	.08
4	18	−.09 to .62	.20
5	18	.02 to .47	.21
6	18	.02 to .44	.24
7	18	−.12 to .53	.12

5. RELIABILITY: reliability of ratings not given.

   Reliability of tests ($N = 172$): 1: .82; 2: .82; 3: .88; 4: .46; 5: .65; 6: .85; 7: .61.

391

PARRIS, H. L.: *A study comparing the Wherry-Doolittle multiple correlation method and the multiple-cut-off method for selecting batteries of tests.* M.A. thesis, University of Southern California, 1947. Pp. 62.

1. SUBJECTS: 60 supervisors studying blueprint reading (aircraft company).
2. TESTS: (1) Kuder Preference Record, Form BB, (2) California Short-

form Test of Mental Maturity, Advanced S-form, (3) Ruch Standard Task 1 (Pursuit), (4) Ruch Standard Task 2 (Blocks).

3. CRITERION: (1) a job test, requiring making a part of clay from a drawing (4 drawings), grades on 5-point scale, (2) a test of knowledge; composite score of the two.

4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION	TEST	CORRELATION
4	.48	1—Persuasive	—.14
2—Language I.Q.	.34	1—Computational . . .	.12
2—Nonlanguage I.Q. . . .	.30	1—Literary	—.12
3	.20	1—Musical	—.08
1—Artistic	.19	1—Scientific	—.03
1—Mechanical	.18	1—Clerical	.17
1—Social service	—.16		

Multiple correlation (Wherry-Doolittle Technique) of Tests 4, 2—Language I.Q., 1—Persuasive, 1—Clerical, and criterion: .66. Multiple correlation of Tests 4 and 2—Language I.Q. and criterion: .60.

5. RELIABILITY: not given.

392

STAFF, Personnel Research Section, Personnel Research and Procedures Branch, Adjutant General's Office: Validation of the General Clerical Abilities Test for selection and placement of war department civilian personnel. *American Psychologist*, 1947, 2: 141–144.

1. SUBJECTS: more than 2000 clerical employees of Census Bureau, Ports of Embarkation, civilian Army employees, etc., in groups as follows: (a) 75 clerical employees, (b) 98 clerical warehouse employees, (c) 181 clerical and warehouse employees combined, (d) 41 payroll clerks, (e) 34 fiscal clerks, (f) 39 tallymen, (g) 48 keypunch operators, (h) 45 personnel interviewers, (i) 87 payroll clerks, (j) 114 general clerks, (k) 265 statistical clerks, Census Bureau, (l) 356 editorial clerks, Census Bureau, (m) 621 (Groups k and l combined), (n) 87 Tab. operators, (o) 87 procedure clerks, (p) 165 clerks, (q) 44 correspondence clerks, (r) 37 personnel interviewers, (s) 36 computing clerks, (t) 99 "other"

clerks, (u) 97 new typists, (v) 74 new clerks, medium work, (w) 84 new clerks, routine work, (x) 61 new computing clerks.

2. TESTS: General Clerical Abilities Test (Personnel Research Section, AGO).

3. CRITERION: (1) Civil Service Grade (essentially a salary criterion), (2) ratings by supervisors (several different scales, not identified with group with which used).

4. VALIDITY: multiple correlation of 3 parts of test (Clerical Speed score, Work Meaning, and Arithmetic) and criterion:

GROUP	*N*	MULTIPLE CORRELATION	
		CRITERION 1	CRITERION 2
a	75	.51	.46
b	98	.50	.33
c	181	.38	.30
d	41	.27	.60
e	34	.41	.18
f	39	.43	.49
g	48	.51	.49
h	45	.34	.28
i	87	.23	.39
j	114	.16	.19
k	265	.58	.29
l	356	.32	.36
m	621	.43	.33
n	87	.16	.13
o	84	.50	.22
p	165	.45	.28
q	44	—	.25
r	37	—	.16
s	36	—	.21
t	99	—	.33
u	97	—	.11
v	74	—	.09
w	84	—	.16
x	61	—	.56

5. RELIABILITY: not given.

393

STOCKFORD, L.: Selection of supervisory personnel. *Personnel*, 1947–48, 24: 186–199.

1. SUBJECTS: (a) 478 group supervisors of direct factory work in fabrication and assembly departments of an aircraft factory, (b) 269 supervisors in same departments, (c) 1,064 supervisors, in same departments, (d) 139 supervisors in Quality Control Section, (e) 983 supervisors from all major organizational units.
2. TESTS: (1) personal data, (2) an employee adjustment scale (rating of personality traits), (3) California Test of Mental Maturity, (4) a test of reading comprehension, (5) an interest test (not specified).
3. CRITERION: Group a: ranking by superiors used to divide group into 4: Superior ($N = 124$), Good ($N = 123$), Fair ($\mathrm{N} = 123$), and Poor ($N = 108$).

   Group b: ranking by superiors, 2 groups: Better ($N = 134$) and Poorer ($N = 135$).

   Group c: rated above or below average by superiors.

   Group d: amount of acceptable work turned out by the subordinates of the supervisors.

   Group e: job level.
4. VALIDITY: Group a: when lowest quartile in each of Tests 1, 2, and 3 is eliminated, the remaining 120 men are distributed in the criterion categories in these proportions:

Superior	63%
Good	20
Fair	7
Poor	10

Group b: differences and critical ratios between the 2 criterion groups in terms of scores on factors found in study of Group a to be important (each factor contains one or several items from tests):

FACTOR	DIFFERENCE	C.R.
1. Community stability	10	1.9
2. Previous related experience	2	0.4
3. Formal training	13	2.3
4. Company seniority	5	1.1
5. Supervisory-staff seniority	13	2.3
6. Performance rating	14	2.7
7. Leadership rating	27	5.0

Group c: comparison of per cent of above-average group and per cent of below-average group for each "profile score" (number of factors, as in Group b, in which S scored below the critical score, which lies at the 1st quartile of Group a):

PROFILE SCORE	PER CENT OF BELOW-AVERAGE GROUP	PER CENT OF ABOVE-AVERAGE GROUP
0	30	70
1	28	72
2	49	51
3	63	37
4	78	22
5	88	12
6–7–8	100	0

Group d: percentage above chance to which each factor predicts supervisory success:

FACTOR	PERCENTAGE ABOVE CHANCE
Company seniority	2
Supervisory rating	5
Community stability	9
Supervisory-staff seniority	11
Intelligence	17
Administrative interest	24
Persuasiveness (interest)	35

Group e: comparison of total median score for total supervisory group, department foremen, and divisional superintendents (figures approximate, read from graphs):

	TOTAL GROUP	DEPARTMENT FOREMEN	DIVISIONAL SUPERINTENDENTS
Company seniority	55	75	85
Supervisory-staff seniority	30	55	65
Previous experience	40	50	65
Formal training	60	65	75
Administrative interest	40	60	75
Persuasive interest	60	75	90
Social service interest	50	40	30
I.Q.	116	122	132

Group a, subgroup of 200, asked about relative advantages and disadvantages of their job: 50 per cent who said "too much paper work" or "top management never tells us what's going on" had significantly lower test scores on Test 4 than those not making these complaints (no figures given).

5. RELIABILITY: not given, except as incidentally given above in a few cases.

394

SURGENT, L. V.: The use of aptitude tests in the selection of radio tube mounters. *Psychological Monographs*, 1947, 61 (283). Pp. 40.

1. SUBJECTS: 233 radio tube mounters, female. Tests used as part of application procedure but results not used in selection.
2. TESTS: (1) Minnesota Rate of Manipulation Test: Placing, (2) Minnesota Rate of Manipulation Test: Turning, (3) O'Connor Finger Dexterity Test, (4) Purdue Pegboard, (5) O'Connor Tweezer Dexterity Test.
3. CRITERION: a single over-all rating based on the pooled judgment of the supervisor of training and 2 instructors; 5-point scale; rating during training period.
4. VALIDITY: biserial correlation between test scores and criterion (groups divided into satisfactory and unsatisfactory):

TEST	CORRELATION	t
1	.56	6.56
2	.50	5.79
3	.48	5.60
4	.64	7.39
5	.59	6.81

Multiple correlation of test scores and criterion (optimum order of test addition):

TEST	CORRELATION
4	.64
5	.72
1	.76
3	.76
2	.76

Follow-up of 35 of the 233 mounters: prediction of criterion scores on basis of a regression equation correlated with over-all rating by immediate supervisor on the job:

Two-test equation, involving Tests 4 and 5: .60
Three-test equation, involving Tests 4, 5, and 1: .43

5. RELIABILITY: rank-order intercorrelations ($N = 51$) of 2 over-all fitness rankings and rankings of quality and quantity of work produced in training (latter 2 one week after first):

ITEMS	CORRELATION
Quality and quantity....................	.66
Quality and over-all fitness rating..........	.74
Quantity and over-all fitness rating	.85

395

THOMPSON, C. E.: Selecting executives by psychological tests. *Educational and Psychological Measurement*, 1947, 7: 773–778.

1. SUBJECTS: 25 staff members (executives) of a large management engineering firm.
2. TESTS: (1) Wonderlic Personnel Test, (2) Michigan Vocabulary Profile, Form Am, (3) Cardall Test of Practical Judgment, (4) Kuder Preference Record, (5) The Personal Audit, (6) A-S Reaction Study, Beckman Revision, (7) Root I-E Test, (8) Guilford-Martin Personnel Inventory.
3. CRITERION: performance records and unanimous partner-evaluation used to select a superior group ($N = 15$) and an average group ($N = 10$) judged at or below average.
4. VALIDITY: significance of differences (critical ratios) between the means of the two groups:

TEST	C.R.
1	1.73
2—total	2.16
—human relations	0.62
—commerce	1.15
—government	1.94
—physical science	1.80
—biological science	0.98
—mathematics	3.88
—fine arts	0.98
—sports	2.28
3	0.57
4—mechanical	1.78
—computational	1.19
—scientific	0.64
—persuasive	0.06
—artistic	1.04
—literary	0.44
—musical	0.73
—social service	2.59
—clerical	0.66
5—serious-impulsive	0.11
—firm-indecisive	2.02
—tranquil-irritable	1.23
—frank-evasive	1.43
—stable-instable	2.73
—tolerant-intolerant	1.34
—steady-emotional	0.73
—persistent-fluctuating	1.10
—content-worried	0.10
6	0.39
7	0.39
8—objectivity	0.07
—agreeableness	0.58
—cooperativeness	0.08

5. RELIABILITY: not given.

396

TIFFIN, J.: *Industrial Psychology*. New York: Prentice-Hall, Inc., 1947. xxi + 553, pp. 94–95. (Also reported in C. H. Lawshe, Jr.: *Principles of personnel testing*. New York: McGraw-Hill Book Company, Inc., 1948. Pp. 72–74.)

1. SUBJECTS: 70 workers to be trained as supervisors.
2. TESTS: The Adaptability Test (SRA).
3. CRITERION: per cent still on supervisory job after 6 months.
4. VALIDITY: comparison of scores of those still on job and those not (about ¼ of the 70 had quit, been demoted, transferred, or dismissed):

SCORE ON TEST	PER CENT OF SUPERVISORS*	
	ON JOB	NOT ON JOB
0–4	0	100
5–9	60	40
10–14	88	12
15 and over	95	5

* Figures are approximate, read from a graph.

5. RELIABILITY: not given.

397

TIMPANY, N.: Assessment for foremanship. *British Journal of Psychology*, General Section, 1947, 38: 23–28.

1. SUBJECTS: about 50 foremen from 3 different factories (6 different groups).
2. TESTS: H T 1, a personality test of the situational variety, paper-and-pencil.
3. CRITERION: paired comparison by superiors for each of the 6 groups on 6 qualities of foremanship.
4. VALIDITY: correlation of scores and ratings for each quality of foremanship:

Technical knowledge	.55
Initiative and improvising ability	.59
Ability to get along with workers	.67
Ability to maintain discipline	.68
Organizing ability	.74
Ability to cooperate with management	.75

5. RELIABILITY: not given; self-consistency of raters said to be high.

398

BARKER, M. E.: Summary of the relation of personality adjustments of teachers to their efficiency in teaching. *Journal of Educational Research*, 1947–48, 41: 664–675.

1. SUBJECTS: 60 elementary school teachers, New York City.
2. TESTS: rating of adjustment in a number of areas by 4 school administrators, experimenter, and general supervisor, based on interviews with a standard blank.
3. CRITERION: rating by principal and general supervisor; one example each of superior, average, and below-average teachers selected from the staff of each of 20 schools.
4. VALIDITY: correlation (product moment) between composite ratings on personal adjustments and criterion:

ADJUSTMENT ITEM	CORRELATION
Family relationships	.25
Living arrangements	.18
Health	.20
Finances	.26
Friends	.08
Sex	.35
Religion	.15
Philosophy	.57
Future goal	.50
Pupils	.58
Administrators	.54
School environment	.36
Emotional situations	.52
Professional growth	.50

5. RELIABILITY: correlation of 3 of the raters with the other 3 ranged from .51 to .89 for 14 areas of adjustment.

399

BOLANOVICH, D. J.: Interest tests reduce factory turnover. *Personnel Psychology*, 1948, 1: 81–92.

1. SUBJECTS: (a) 212 factory employees (female) employed in simple electrical assembly, (b) 110 factory employees (female), operators of phonograph record presses, used as a follow-up group.
2. TESTS: Interest Sampler C, especially devised for this study to indicate interest in factory work.
3. CRITERION: length of time on the job.
4. VALIDITY: correlation (biserial) between test scores (weights developed on Group a) and termination:

Group a..........	.43
Group b..........	.43

5. RELIABILITY: not given.

400

CALIFORNIA TEST BUREAU: *Prediction of success in completion of an orientation and technical training course for bookkeepers and tellers in a large banking institution.* Unpublished data, 1948.

1. SUBJECTS: 3 groups of trainees: (a) 93 bookkeepers and tellers in a large banking institution, (b) 72 bookkeepers, (c) 116 tellers. Tested during first few days of training period.
2. TESTS: those retained on the basis of their contribution to the total predictive value of the battery: (1) Lee-Clark Arithmetic Fundamentals Survey Test, (2) 1947 California Short-form Test of Mental Maturity: Number Series, (3) a verbal checking test, (4) Ruch Survey of Working Speed and Accuracy: Number Checking and Counting Vowels, (5) MacQuarrie Test for Mechanical Ability: Blocks, Location, and Tracing.

3. CRITERION: ratings by instructors in the training course on both the orientation and the bookkeeping or telling aspects of the course.
4. VALIDITY: correlation of weighted scores in test battery and combined ratings (corrected for attenuation):

Group a.	.61
Group b.	.89
Group c.	.66

5. RELIABILITY: Group a: .66 for tellers, .79 for bookkeepers (method not given; *N* for separate groups not given).

401

CALIFORNIA TEST BUREAU: Unpublished study of glove fabricators, 1948.

1. SUBJECTS: 91 glove fabricators (several operations).
2. TESTS: MacQuarrie Test for Mechanical Ability: Tapping, Dotting, Location, and Blocks.
3. CRITERION: a work efficiency scale.
4. VALIDITY: correlation (Otis like-unlike sign) of test scores and criterion: .54.
5. RELIABILITY: not given.

402

CALIFORNIA TEST BUREAU: Unpublished study on Moore Eye-Hand Coordination and Color-matching Test, 1948.

1. SUBJECTS: (a) 23 textile weavers, (b) 10 ice-cream sandwich makers.
2. TESTS: Moore Eye-Hand Coordination and Color-matching Test.
3. CRITERION: Group a: hourly earning rate. Group b: production in dozen per day.
4. VALIDITY: correlation (tetrachoric) of test scores and criterion: Group a: .86; Group b: 0.52 (speed of eye-hand coordination scores).
5. RELIABILITY: not given for criterion; for test: test-retest after 1 week ($N = 187$): .95.

403

CASE, H. W., and RUCH, F. L.: *Survey of Spatial Relations Ability, Form A, Revised Manual*, 1948.

1. SUBJECTS: (a) 130 riveter trainees, (b) 22 sheet metal trainees, employed by a large airframe manufacturing company.
2. TESTS: Case-Ruch Survey of Spatial Relations Ability.
3. CRITERION: instructor's grades (on the job).
4. VALIDITY: correlation of test scores and criterion:

Group a..........	.42
Group b..........	.47

5. RELIABILITY: not given.

404

CLARKE, W. V.: The Activity Vector Analysis. Unpublished data, 1948 (personal communication).

1. SUBJECTS: 57 skilled machinists (milling machines, lathes, drill presses, grinders, etc.).
2. TESTS: The Activity Vector Analysis (personality).
3. CRITERION: over-all ratings by supervisors, 5-point scale, based on quantity of work, quality of work, attention to work, and attention to safety.
4. VALIDITY: comparison of per cent having test scores of over 50 on activity with those having test scores under 50 for each rating:

RATING	PER CENT OVER 50	PER CENT UNDER 50
Excellent	100	0
Very good	82	18
Good	42	48
Fair	25	75
Poor	5	95

5. RELIABILITY: not given.

405

Cox, K. J.: Can the Rorschach pick sales clerks? An exploratory study. *Personnel Psychology*, 1948, 1: 357–363.

1. SUBJECTS: 108 department-store salespersons: (a) 36 in millinery department, (b) 72 in dress department.
2. TESTS: Harrower-Erickson Multiple-choice Rorschach Test; weighted scoring developed with this group.
3. CRITERION: ranking by department managers.
4. VALIDITY: per cent of A (top 25) and C (bottom 25) criterion groups receiving positive and negative scores on the test:

	NEGATIVE SCORE	POSITIVE SCORE
Group a (millinery)		
A	11%	89%
C	55	45
Group b (dress)		
A	0	100
C	83	17

5. RELIABILITY: not given.

406

Espenschade, A.: Selection of women major students in physical education. *Research Quarterly*, American Association for Health, Physical Education, and Recreation, 1948, 19: 70–76.

1. SUBJECTS: 46 teachers of physical education, female.
2. TESTS: (1) Bernreuter Personality Inventory, (2) Strong Vocational Interest Blank (Collins's key for women physical education majors), (3) grade-point average in academic subjects, (4) grade-point average in physical education activities, (5) ratings by 7 instructors on probable teaching success, (6) ratings by 7 instructors on personal qualities.
3. CRITERION: ratings by school principals after 1 year of teaching.
4. VALIDITY: correlation of tests and criterion:

TEST	CORRELATION
2	.07
1—B1N	.09
1—B2S	−.23
1—B4D	.10
1—F2S	.28
3	.12
4	.24
5	.48
6	.36

Multiple correlation of Tests 4, 5, and 6 with criterion: .49.

5. RELIABILITY: not given.

407

GHISELLI, E. E.: Unpublished data on candy packers, 1948.

1. SUBJECTS: 21 candy packers (sometimes *N* drops to 19).
2. TESTS: (1) tapping, (2) dotting, (3) Minnesota Vocational Test for Clerical Workers: Number Series, (4) Minnesota Vocational Test for Clerical Workers: Name Series, (5) Minnesota Rate of Manipulation Test: Placing, (6) Minnesota Rate of Manipulation Test: Turning.
3. CRITERION: supervisor's ratings.
4. VALIDITY: correlation of test score and criterion:

TEST	CORRELATION	*N*
1	.10	21
2	.45	21
3	.51	21
4	.19	21
5	.10	19
6	.32	19

5. RELIABILITY: not given.

408

GHISELLI, E. E.: Unpublished data on comptometer machine operators. 1948.

1. SUBJECTS: 134 comptometer machine operators.
2. TESTS: an intelligence test.
3. CRITERION: supervisor's ratings.
4. VALIDITY: correlation of test score and criterion: .45.
5. RELIABILITY: not given.

409

GHISELLI, E. E.: Unpublished data on general clerical workers, 1948.

1. SUBJECTS: 314 general clerical workers.
2. TESTS: (1) immediate memory, (2) arithmetic, (3) substitution, (4) number comparison, (5) name comparison.
3. CRITERION: supervisor's ratings.
4. VALIDITY: correlation of test scores and criterion:

TEST	CORRELATION
1	.36
2	.20
3	.32
4	.31
5	.27

5. RELIABILITY: not given.

410

GIESE, W. J., and WEIGLE, F.: Evaluation of a clerical applicant testing program. *Journal of Applied Psychology*, 1948, 32: 581–586.

1. SUBJECTS: (a) 43, (b) 72, clerical and stenographic applicants.
2. TESTS: (1) Clerical Test D, (2) StenoGaugE.

3. CRITERION: supervisor's ratings after 3 months on the job.
4. VALIDITY: correlation (product moment) of test scores and criterion:

GROUP	TEST 1	TEST 2
a	.61 ± .10	
b		.39 ± .10

5. RELIABILITY: not given.

411

GUILFORD, J. P., and COMREY, A. L.: Prediction of proficiency of administrative personnel from personal history data. *Educational and Psychological Measurement*, 1948, 8: 281–296.

1. SUBJECTS: 328 elementary and junior high school principals (93 per cent of the total group) divided into 3 groups: (a) 122 females selected at random, (b) remaining 123 females, (c) 83 males.
2. TESTS: a biographical-data inventory of 150 multiple-choice items, developed for this study.
3. CRITERION: a score derived from independent ratings by 3 or more superintendents.
4. VALIDITY: analysis of the 86 phi coefficients of significant size:
    1. 24 responses were significant in Group a only.
    2. 12 responses were significant in Group b only.
    3. 30 responses were significant in Group c only.
    4. 4 responses were significant in same direction in Groups b and c.
    5. 1 response was significant in same direction in Groups a and c.
    6. 2 responses were significant in opposite direction in Groups b and c.
    7. 1 item was significant in opposite direction in Groups b and c.
    8. No response was significant in same direction for all 3 groups.
    9. No response was significant in same direction for Groups a and b (the 2 female groups).
    10. A total of 57 items was involved in the 86 significant correlations for the 3 groups combined.
5. RELIABILITY: phi coefficient (corrected for continuity) between 1st and last ratings for 242 cases who had been rated at least twice: .66.

412

Habegger, O. F., Jr.: *A case history of selecting salesmen.* National Industrial Conference Board, Studies in Personnel Policy No. 92, 1948, 15–17.

1. subjects: 153 salesmen of gas heating equipment and water heaters for domestic and industrial use, 2 separate groups: (a) experimental group of 79, (b) a follow-up group of 74.
2. tests: (1) Strong Vocational Interest Blank, (2) Bernreuter Personality Inventory, (3) Measurement of Sales Aptitude, (4) Salesmen's Classification Test, (5) Minnesota Paper Formboard.
3. criterion: sales records; of experimental group (a) half were outstanding, half "below par."
4. validity: use of the "Sales Talent Indicator" (the discriminating items in Tests 1, 2, and 3) would have resulted in an improvement of 62 per cent over the then-present selection methods. Subsequent check studies have shown these results to be accurate.
5. reliability: not given.

413

Helbert, C. N.: *A practical testing program.* National Industrial Conference Board, Studies in Personnel Policy No. 92, 1948, 13–14.

1. subjects: (a) 27 "spoolers" (winding photographic film and paper on a spool), (b) 26 "spoolers" (a separate group).
2. tests: a finger dexterity test.
3. criterion: production (no further information).
4. validity: Group a: comparison of average time on test for "best," "average," and "poorest" groups:

GROUP	N	AVERAGE TEST TIME
Best	7	201 seconds
Average	10	240 seconds
Poorest	10	247 seconds

Group b: comparison of average hourly make-up pay (in cents per hour) for the 9 passing the test (critical score = 240 seconds) and the 17 failing the test:

GROUP	WEEKS ON THE JOB			
	2	5	8	10
Passing	35*	12	4	1
Failing	43	28	23	29

* Approximate—figures read from graph.

All members of the failing group left the job by the end of 10 weeks.

5. RELIABILITY: not given.

414

KEPHART, N. C.: Visual skills and labor turnover. *Journal of Applied Psychology*, 1948, 32: 51–55.

1. SUBJECTS: 99 lens inspectors, optical goods manufacturing company.
2. TESTS: Ortho-Rater Vision Tests.
3. CRITERION: length of time on the job.
4. VALIDITY: comparison of per cent remaining on job 8 months or more with per cent remaining less than 4 months, among those passing vertical (between 5 and 7) and lateral (less than 9) phoria tests:

	Test Score		
	PASS	FAIL	TOTAL
Stay	31	1	32
Quit	42	25	67

Correlation (tetrachoric) of test scores (vertical and lateral phoria) criterion: .71.

5. RELIABILITY: not given.

415

KERR, W. A.: Vision tests for precision workers at RCA. *Personnel Psychology*, 1948, 1: 63–66.

1. SUBJECTS: 226 radio tube mounters, female.
2. TESTS: Ortho-Rater Vision Tests.
3. CRITERION: production efficiency ratings A, B, or C, based on records of quality and quantity of production in view of type of tube work.
4. VALIDITY: tetrachoric correlation of test scores and criterion:

TEST	CORRELATION
Binocular acuity, near	.22
Binocular acuity, far	.19
Color discrimination	.13
Depth perception	.07
Experience	.58
Near acuity, better eye minus worse eye	—.31

5. RELIABILITY: not given.

416

KURTZ, A. K.: A research test of the Rorschach Test. *Personnel Psychology*, 1948, 1: 41–51.

1. SUBJECTS: (a) 80 life insurance sales managers, (b) 41 life insurance sales managers.
2. TESTS: (1) Rorschach Test, (2) Experience Record Form (personal data).
3. CRITERION: original groups selected from among several hundred managers; designated by superiors as very satisfactory or unsatisfactory. Group a: 42 very satisfactory, 38 unsatisfactory. Group b: 21 good, 20 poor.
4. VALIDITY: Group a: traditional Rorschach scoring was not predictive: special scoring developed from records of the group correctly classified 79 of the 80.

Group b: follow-up, using the newly developed scoring system on another group: correlation (Pearsonian) of Rorschach Test scores and criterion: .02; Test 2 and criterion: .48. Qualitative interpretation of Rorschach correlated with criterion .17 (not significant).

5. RELIABILITY: not given.

417a

LAWSHE, C. H., JR.: *Principles of personnel testing*. New York: McGraw-Hill Book Company, Inc., 1948. xi + 227, pp. 71–72.

1. SUBJECTS: 38 pickler learners in a steel mill.
2. TESTS: Tiffin and Lawshe Adaptability Test, given at time of hiring.
3. CRITERION: (1) length of service ($N = 38$), (2) rating of survivors ($N = 15$) by supervisors after 3 months on the job.
4. VALIDITY: comparison of good and poor on test:

	ACCEPTABLE SCORE	SCORE OUTSIDE ACCEPTABLE RANGE
Criterion 1:		
Quit within 2 months or discharged	8	15
On job after 3 months	10	5
Criterion 2:		
Average or above average	8	1
Below average	2	4

5. RELIABILITY: not given.

417b

LAWSHE, C. H., JR.: *Principles of personnel testing*. New York: McGraw-Hill Book Company, Inc., 1948. xi + 227, p. 139.

1. SUBJECTS: 28 bar-mill employees in a steel mill, tested at time of hiring.
2. TESTS: (1) Purdue Industrial Training Classification Test, (2) Tiffin

and Lawshe Adaptability Test, (3) Purdue Mechanical Adaptability Test.

3. CRITERION: rating by supervisors; 5-point scale.

4. VALIDITY: correlation between criterion and test scores:

TEST	CORRELATION
1	.72
2	.59
3	.57

Per cent of each of the 5 rated groups who scored above and below critical score of 8 on Test 1:

RATING	ABOVE	BELOW
5	100%	0%
4	100	0
3	90	10
2	17	83
1	0	100

5. RELIABILITY: not given.

418

MANDELL, M. M., and ADAMS, S.: Selection of physical scientists. *Educational and Psychological Measurement*, 1948, 8: 575–581.

1. SUBJECTS: (a) about 250 physicists, chemists, and engineers in grades P-1 through P-7, engaged in testing, instrumentation, standardization, and other research work at the National Bureau of Standards and the Naval Ordnance Laboratory, (b) about 125 research and development engineers at the Air Materiel Command Laboratories at Wright-Patterson Fields.

2. TESTS: (1) U.S. Civil Service Abstract Reasoning (Figure Analogies), (2) Gottschaldt Figures (Thurstone revision), (3) spatial tests (cube turning, surface development, two cube, block formulation, and block counting tests), (4) Mathematical Formulation, (5) Letter and Number Series (reasoning), (6) Table Reading (speed test), (7) Verbal Analogies, (8) Interpretation of data, (9) Hypotheses, (10) scrambled sentences,

(11) Biographical Information Blank, (12) Reading Comprehension, (13) Science Judgment, (14) Subject Matter, (15) Vocabulary.

3. CRITERION: (1) graphic rating scale for a number of traits, and summary ratings (5-point scale), by supervisors, colleagues, and in some cases subordinates, combined into one average rating, (2) salary level used as an additional criterion.

4. VALIDITY: correlation (product moment) of test scores and criterion:

TEST	CRITERION	CORRELATION	GROUP
1	1	about .5	For samples of 21 to 28 chemists and engineers
1	1 and 2	about 0	Physicists
2	1	.4	28 electrical engineers (poor results with other groups)
3—block formulation	1	.4	26 electrical engineers and 19 mechanical engineers
4	1	.59	26 electrical engineers
13	1	.48	33 physicists
13	1	about 0	Engineers
14	2	.5	62 physicists, 2 independent samples

5. RELIABILITY: said to be "low."

419

MOUNT, G. E.: Unpublished study on checkstand operators, 1948.

1. SUBJECTS: checkstand operators, grocery stores: (a) 213 males and females, (b) 165 males, (c) 225 males, 94 females.
2. TESTS: (1) Change-making Test, (2) Arithmetic Test, (3) Interest Test (all tests in the Food Clerk Selection Battery specially constructed for this study), (4) personal data: sex, previous checkstand experience, number of jobs previously held, average time per job.
3. CRITERION: (1) speed of checkstand operation, job sample, checked by trained "professional" shoppers who were trained checkstand operators themselves, taken after at least 10 weeks on the job, (2) terminations at 120 days.

4. VALIDITY: (1) prediction of speed of checkstand operation (all cases) from a combined score composed of the following: Tests 1 and 2, previous checkstand experience, and sex: ($N = 123$, male and female):

SCORE	CUMULATIVE PER CENT OF CASES	CUMULATIVE PER CENT BETTER THAN AVERAGE
6	2	27
5	4	25
4	8	22
3	13	18
2	24	14
1	37	12
0	52	9
−1	67	5
−2	77	4
−3	85	2
−4	87	2
−5	91	1
−6	94	1

(2) prediction of speed of checkstand operation from a combined score of the following: Tests 1 and 2, average previous checkstand experience ($N = 165$, male):

SCORE	CUMULATIVE PER CENT OF CASES	CUMULATIVE PER CENT BETTER THAN AVERAGE
6	1	25
5	2	23
4	3	22
3	5	19
2	12	14
1	24	12
0	42	10
−1	61	6
−2	71	5
−3	81	3
−4	85	2
−5	90	2
−6	95	1

(3) prediction of termination at 120 days from a combined score composed of the following: Test 3, number of jobs, and average time per job.

GROUP	*N*	TERMINATION RATE FOR ALL CASES	PER CENT OF CASES REJECTED BY COMBINED SCORE	TERMINATION RATE OF CASES SELECTED BY COMBINED SCORE
Males	225	33	23	24
Females	94	25	33	16

5. RELIABILITY: not given.

420

Rundquist, E. A., and Bittner, R. H.: Using ratings to validate personnel instruments: a study in method. *Personnel Psychology*, 1948, 1: 163–183.

1. SUBJECTS: 131 glass-container selectors (inspectors) of more than 2 months' experience (2 groups of 64 and 67).
2. TESTS: 3 tests in final battery: (1) speed and accuracy of perception, (2) speed of reaction, (3) eye-hand coordination (not identified).
3. CRITERION: rating by foremen (2 foremen, rating groups of 64 and 67 persons respectively) by a combination of rank-order and paired comparison methods, on ability to do job, personality, and over-all value.
4. VALIDITY: correlation of test battery scores and criteria:

RATING	FOREMAN a	FOREMAN b
Ability, 1st method	.33	.17
Ability, 2nd method*	.38	.23
Personality	.36	.31
Over-all	.33	.35
Ability 1 + personality + over-all	.35	.30

* Attempt to compensate for bias in direction of longer service.

5. RELIABILITY: rerating, using same rating technique, with a different group ($N = 75$) correlated .92 with the original rating. For groups appearing in validity study, length of service correlated with the ratings as follows:

RATING	FOREMAN a	FOREMAN b
Ability 1	.60	.72
Ability 2	.48	.53
Personality	.50	-.06
Over-all	.56	.48

421

SEASHORE, H. B., and BENNETT, G. K.: A test of stenography: some preliminary results. *Personnel Psychology*, 1948, 1: 197–209.

1. SUBJECTS: 52 experienced stenographers.
2. TESTS: Seashore-Bennett Stenographic Proficiency Tests, Form B-1.
3. CRITERION: rating by supervisors (method not given).
4. VALIDITY: correlation of test scores with ratings:

RATINGS ON:	CORRELATION
1. Stenography	.61
2. Typing	.41
3. 1 and 2	.58
4. Language	.32
5. General clerical ability	.20
6. 1, 2, 4, and 5	.48
7. Over-all efficiency	.38
8. All ratings combined	.49

5. RELIABILITY: not given for criterion; for test (split-half, corrected) for this group: .83.

422

SELOVER, R. B.: The development and validation of a battery of tests for the selection of clerical workers. Abstract in *American Psychologist*, 1948, 3: 291–292, and personal communication.

1. SUBJECTS: (a) 193 clerical workers, insurance company, (b) 85 clerical workers, insurance company.

2. TESTS: (1) vocabulary, (2) arithmetic reasoning, (3) calculation, (4) speed of reading, (5) memory, (6) letter-digit substitution, (7) name checking, (8) number checking, (9) dotting, (10) tapping, (11) posting (all constructed for this study).
3. CRITERION: combined ratings by 3 supervisors (independent) on: accuracy, memory, production, and over-all value.
4. VALIDITY: multiple correlation of 4 tests (Numbers 6, 3, 7, and 8, selected by Wherry test-selection method) and over-all rating: Group a . . . . .41: Group b . . . .33.
5. RELIABILITY: average: .70; range: .49 to 1.00; ranking vs. rating on over-all value: .89.

423a

STROMBERG, E. L.: *The Discriminative Dexterity Test, Preliminary Manual.* Cleveland: Author, 1948. Pp. 8.

1. SUBJECTS: (a) 20 foundry machine moulders, (b) 28 foundry machine moulders.
2. TESTS: Discriminative Dexterity Test.
3. CRITERION: average hourly earnings.
4. VALIDITY: correlation (product moment) of test scores and criterion:

Group a..........	.46
Group b..........	.70

5. RELIABILITY: not given for criterion. Intercorrelation of Trial 3 and Trial 4 of the test ($N = 339$), corrected by Spearman-Brown formula: .88. Test-retest correlation ($N = 18$): .84.

423b

STROMBERG, E. L.: *The Discriminative Dexterity Test, Preliminary Manual.* Cleveland: Author, 1948. Pp. 8, and personal communication.

1. SUBJECTS: (a) 29 apparel pressers, laundry, (b) 16 machine operators, dry cleaning plant, (c) 31 general service employees (female), laundry, (d) 112 general service employees (female), laundry, (e) 24 general service employees (female), laundry.

2. TESTS: Discriminative Dexterity Test.
3. CRITERION: rating by supervisors.
4. VALIDITY: biserial correlation of test scores and ratings:

GROUP	CORRELATION
a	.65
b	.47
c	.35
d	.25
e	.24

5. RELIABILITY: not given.

424

TIFFIN, J., and ASHER, E. J.: The Purdue Pegboard: Norms and studies of reliability and validity. *Journal of Applied Psychology*, 1948, 32: 234–247.

1. SUBJECTS: (a) 17 (occasionally 16) light machine operators, (b) 28 textile quillers, (c) 15 assemblers of small parts (simple assembly).
2. TESTS: Purdue Pegboard.
3. CRITERION: Group a: (1) make-up pay while learning, (2) earnings after learning period. Groups b and c: (3) production index.
4. VALIDITY: correlation of test scores and criterion:

SUBTEST	GROUP	CRITERION	CORRELATION
Right hand	a	1	.56
Right hand	a	2	.52
Right hand	c	3	.76
Left hand	a	1	.23
Left hand	a	2	.20
Both hands	a	1	.21
Both hands	a	2	.07
Right + left + both	a	1	.31
Right + left + both	a	2	.33
Assembly	a	1	.38
Assembly	a	2	.38
Assembly	b	3	.15
Assembly	c	3	.76

5. RELIABILITY: not given for criterion. Test-retest reliability (college students) for various subtests: right hand: .63; left hand: .60; both hands: .68; right + left + both: .71; assembly: .68.

425

WESMAN, A. G.: *Personnel Classification Test, Revised Manual.* 1948.

1. SUBJECTS: 63 sales clerks in chain stores (2 stores in this study).
2. TESTS: Personnel Classification Test (Wesman), Form A.
3. CRITERION: rating by supervisors as Good, Average, or Poor.
4. VALIDITY: per cent of each group eliminated by rejecting all scoring below 17:

Poor	71%
Average and Good	28

5. RELIABILITY: not given for criterion. For tests on 174 chain store clerks: .83; standard error of measurement: 2.0.

426

CHAPPLE, E. D.: The interaction chronograph: its evolution and present application. *Personnel*, 1948–49, 25: 295–307.

1. SUBJECTS: 45 personnel administrators in a large organization.
2. TESTS: Interaction Chronograph.
3. CRITERION: "generalized" rating (not further specified).
4. VALIDITY: multiple correlation between two variables of test (not specified) and criterion: .68.
5. RELIABILITY: not given.

TEST INDEX

An attempt has been made to include only standard tests; specially devised tests used in only one study and not generally available are not indexed. Authors are not very accurate in listing test names. In some cases the proper name is obvious and the entry is indexed under this; in other cases it is not clear whether a standard test of somewhat similar name is intended, or whether the author has constructed a new test or a new version of a standard test. In the latter case we have had to use our best judgment as to which entry was proper.

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